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Information Collection Request for Monitoring, Reporting, and Recordkeeping Requirements under the Technical Regulation for Sewage Sludge Use and Disposal

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INFORMATION COLLECTION REQUEST FOR:

MONITORING, REPORTING, AND RECORDKEEPING REQUIREMENTS UNDER THE TECHNICAL REGULATION FOR SEWAGE SLUDGE USE AND DISPOSAL

Prepared for:

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An estimation of burden hours for monitoring, reporting and record-keeping associated with the sewage sludge technical regulations at 40 CFR Part 503 are presented.

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TABLE OF CONTENTS (Continued)

APPENDIX A -- RELEVANT SECTIONS OF STATUTES AND REGULATIONS

APPENDIX B -- COMPARISON OF EXISTING AND PROPOSED REGULATIONS FOR CONTROL OF PATHOGENS

TABLE OF CONTENTS

		PAGE
INTRODUCTION		
	The Proposed Rule	1
	Summary of the Information Collection Request	2
SUPPORTING STATEMENT		
1.	Need for Information Collection	3
2.	Description and Practical Utility of The Information Collection Activity	5
	Description	5
	Practical Utility of the Information	13
3.	Minimizing Burden	14
4.	Non-Duplication	15
5.	Consideration of Alternatives	16
6.	Impact on Small Businesses	17
7.	Consideration of Less Frequent Collection	17
8.	Paperwork Reduction Act Guidelines	18
9.	Consultations	20
10.	Confidentiality	20
11.	Sensitive Questions	20
12.	Cost to the Government and to the Respondents	20
	Cost to the Federal Government	20
	Cost to the Respondents	21
	Land Application	24
	Distribution and Marketing	35
	Monofill	46
	Incineration	55
	Surface Disposal	66
13.	Estimation of Respondent Burden	68
14.	Reasons for Change in Burden	68
15.	Scheduling	68
16.	Standard Industrial Classifications	69

INFORMATION COLLECTION REQUEST FOR THE TECHNICAL REGULATION FOR SEWAGE SLUDGE USE AND DISPOSAL

INTRODUCTION

Section 405 of the 1977 Clean Water Act requires the Environmental Protection Agency (EPA) to regulate the use and disposal of sludge produced by treatment works. EPA has proposed a regulation with technical requirements governing each of the conventional options for sludge use/disposal: ocean disposal; incineration; land application; distribution and marketing; monofilling; and surface disposal. This document is the Information Collection Request (ICR) for the regulation.

THE PROPOSED RULE

The proposed regulation for the use and disposal of sewage sludge establishes requirements for each disposal option including:

- Land Application
- Distribution and Marketing
- Monofilling
- Incineration
- Surface Disposal

Although there is a separate set of requirements for each sludge disposal option, the requirement structure is generally the same. The requirements are of two types: (1) numerical limitations for pollutant levels and (2) management practices that address disposal operations.

Land application addresses agricultural and non-agricultural end uses. There are separate numerical criteria and management practices for each of these uses. The criteria are maximum allowable cumulative and annual pollutant loading rates for soils. Management practices include pathogen vector reduction, public access restrictions, controls for human food products related to sludge amended soils and site maintenance.

The requirements for the distribution and marketing consists of limiting sludge concentrations, pathogen and vector attraction reduction and the mandatory use of labels or hand-outs. The hand-outs or labels whichever is applicable, describes the proper use and management of the sludge product.

Monofilling of sewage sludge requires sludge pollutant concentrations or use of six site specific parameters in a computerized simulation model to determine appropriate sludge pollutant concentrations. It also requires specific management practices and some recordkeeping.

The owners or operators of treatment works with sewage sludge incinerators must meet reference air concentrations (RAC). Methods and procedures for determining compliance with sludge pollutant concentrations are provided in the regulation. A set of management practices such as continuous monitoring and recordkeeping of various incinerator operating parameters are required.

The requirements for the disposal of sludge in surface disposal sites includes limiting sludge concentrations and mandatory management practices. Compliance with specific management practices must be certified. Some of the management practices prohibit placement of disposal sites on wetlands, grazing of animals, and growing feed or food crops.

SUMMARY OF THE INFORMATION COLLECTION REQUEST

The proposed regulation implements 1987 amendments to Section 405 of the Clean Water Act by establishing numerical limit and management practices to control sewage sludge use and disposal. Several data collection requirements must be implemented to assure compliance with the regulation. These requirements may be additional information on permit applications, compliance monitoring and increased record retention periods. The information will be collected at time of program approval and in monthly, quarterly, or annual reports.

Data collection requirements in the proposed rule apply to treatment works that generate or treat sewage sludge. It also applies to any person who either uses or disposes of sewage sludge generated or treated at a treatment works.

The total estimated three year cost to respondents to comply with the proposed data collection requirements is $38,766,000. The total estimated burden hours for three years is 2,278,000.

INFORMATION COLLECTION REQUEST:
SUPPORTING STATEMENT

1. NEED FOR THE INFORMATION COLLECTION

Increased wastewater treatment required by the Clean Water Act has resulted in increased production of sewage sludge. Municipalities currently produce more than 7.6 million dry metric tons of wastewater sludge every year--about 32 kilograms per person annually. That is more than double the amount of sludge produced when the Clean Water Act of 1972 was enacted.

Proper management of sewage sludge is becoming increasingly important as more pollutants are removed from effluent. Also, greater attention to surface water toxics control--as well as Resource Conservation and Recovery Act (RCRA) provisions such as the land disposal ban and Domestic Sewage Exemption--may mean even greater amounts of toxic and hazardous pollutants will reach POTWs and may adversely affect sludge quality.

Sludge management and the various sludge disposal practices are linked to solid waste, wetlands protection and pretreatment programs. Improper landfilling and land application of sludge, as well as failure to ensure that sludge is of sufficient quality, could result in sludge contaminants reaching ground water and vulnerable wetlands. Concern for air quality necessitates proper controls over sludge incineration. The interrelationship among these media requires a tightly constructed, comprehensive approach that closes environmental loopholes and assures that solving problems in one medium will not create problems in another.

Concerns about the potential environmental problems posed by sewage sludge use and disposal, and the lack of a comprehensive legislative framework governing sludge management, led to the creation of an intra-Agency Sludge Task Force (STF) in early 1982 to study and make recommendations for Agency actions in the sludge management area. The STF approached the issue from a multi-media perspective. In response to the recommendations of the Agency Sludge Task Force, EPA proposed State Sewage Sludge Management Program Revisions (51 FR 4458) on February 4, 1986 as part of the larger goal of establishing a consistent role in sludge management across all environmental media and all management practices, and to establish the Federal regulatory role in the context of the role expected of State and Local governments.

(See "Policy on Municipal Sludge Management" 49 FR 24358, June 12, 1984). The rules would have required States to develop sludge management programs to assure that the use and disposal of sewage sludge complied with the Federal standards, including standards promulgated under Section 405 of the CWA. That approach was in line with the Task Force's conclusion that each State should prepare its own program to implement the sludge criteria and EPA should review State programs for sufficiency.

The proposed regulations' principal requirements were that States would submit to EPA for review and approval a description of their existing sludge management programs plus plans and schedules for improving them to meet the added requirements of the proposal. The proposal established minimum requirements for approvable sludge management programs. It also provided the procedural requirements for submitting, approving, revising and withdrawing program approval. The proposed regulations did not require sludge standards to be implemented through permits because the CWA, prior to the February 1987 amendments, did not specify a mechanism such as a permit program for implementing sludge criteria.

In the 1987 amendments to the Clean Water Act (Water Quality Act of 1987, Pub. L. 100-4), Congress provided for a comprehensive program to regulate the use and disposal of sewage sludge in an environmentally safe manner, while encouraging the beneficial reuse of sludge. The amendments to Section 405 of the CWA restated EPA's responsibility to promulgate technical sewage sludge regulations for its safe use and disposal. The amendments also established, for the first time, a permit program as the means for implementing the technical requirements.

Generally, EPA must issue permits to POTWs and other treatment works treating domestic sewage which include sludge requirements unless a state with an approved sludge management program is responsible for issuing permits. To implement the 1987 amendments, EPA has proposed revisions to the NPDES permit programs regulations (Parts 122 and 124) to include provisions for including sludge requirements in permits. It also proposed regulations for approving State sludge management programs, either as part of a State's NPDES program (40 CFR Part 123) or as a separate program (40 CFR Part 501).

This document focuses on the information collection requirements in the proposed "Sewage Sludge Technical Regulation", 40 CFR Part 503, specifically mandated by the Clean Water Act (CWA) Section 405(d). Section 405(d) requires U.S. EPA to issue a regulation which will: (1) identify uses for sludge including disposal; (2) specify factors to be taken into account in determining the measures and practices applicable for each use or disposal (including costs); and (3) identify concentrations of pollutants which interfere with each use or disposal. The

numerical criteria established by the regulation must be adequate to protect public health and the environment from any reasonable anticipated adverse effects of each pollutant. Compliance with the regulation should be as expeditious as practicable but not later than 12 months after their publication. However, if construction of new control facilities are necessary the date of compliance may be extended but in no case shall it be extended beyond two years from the publication date of the regulation.

Information collected for the technical regulation on the use and disposal of sewage sludge is needed so that EPA and states can monitor facility compliance with the technical requirements which consist of limits on pollutant concentrations in sludge and management practices.

2. DESCRIPTION AND PRACTICAL UTILITY OF THE INFORMATION COLLECTION ACTIVITY

(a) Description of Information Collection Activity

Respondents to the Sewage Sludge Technical Regulation will be privately owned treatment works (PrOTW) and publicly owned treatment works (POTWs). Information users include the approved States and the EPA regional offices. This ICR assumes that the treatment works are in compliance with the sludge management program requirements. Therefore, the information required under the sewage sludge technical regulations will be incremental to existing requirements.

The technical regulation is divided into five end uses: (1) land application, (2) distribution and marketing, (3) monofills, (4) incineration (5) surface disposal. All have specific information requirements in three categories: monitoring, recordkeeping and reporting. In addition, there is a subsection that deals with general requirements that encompass all end uses. Therefore, this description will be subdivided into the end uses and a general category. Each end use will be further subdivided into the three required categories.

° General

Respondent will sample sewage sludge in accordance with the procedures and protocols in the publication Sampling Procedures and Protocols for the National Sewage Sludge Survey, Office of Water Regulations and Standards, March 1988. Samples of sewage sludge collected to determine compliance with limits in this part for organic pollutants shall be analyzed in accordance with either Methods 1624 and 1625 or Methods 624 and 625 in 40 CFR Part 136 (49 Federal Register 209, October 26, 1984). Those collected to determine compliance with limits in this part for inorganic pollutants shall be analyzed in accordance with methods for analysis of inorganic pollutants in the publication Analytical Methods for the National Sewage Sludge Survey, Office of Water Sample Control Center, March 1988.

Several other measurements will be determined in accordance with Standard Methods for the Elimination of Water and Wastewater, 16th Edition, 1985. The specific parts for each measurement are listed below:

Measurement	Part
Pathogenic Bacteria	912
Animal Virus	913
Fecal Coliform	908,909
Fecal Streptococci	910
Protozoa	
Volatile Solids	209C
Volatile Suspended Solids	209G

The percent volatile solids reduction (VSR) shall be calculated using the following equation.

$$\% \text{ VSR} = \frac{(Mi-Mg)}{Mi} \times 100$$

VSR= volatile solids reduction.

Mi = mass of volatile solids in sludge prior to stabilization.

Mg = mass of solids in sludge after stabilization.

The frequency of monitoring and reporting will depend on the treatment works design capacity. Unless otherwise indicated for specific parameters the compliance requirements are as follows.

Treatment Works Design Capacity (wastewater, million gallons per day)	Frequency
less than 1.0	once per year
1.0 to 10.0	once per quarter
greater than 10.0	once per month

Land Application is the application of liquid, dewatered, dried, or composted sewage sludge to the land. The land may be agricultural or non-agricultural. Agricultural land is land on which crops are grown for either direct or indirect human consumption or for animal feed. This includes land used as pasture for grazing animals. Non-agricultural land is land on which neither food nor feed crops are grown and land not used as a pasture. This includes, but is not limited to, forest land, reclaimed land, turf farms, and dedicated land. Reclaimed land is land, such as disturbed land (e.g., a strip mine) and marginally productive land, on which sewage sludge is used to help revegetate and reclaim the land. Typically, sewage sludge is applied to reclaimed land one time as part of the reclamation process. Dedicated land is land on which sewage sludge is disposed and the land is not used to grow feed or food crop. No attempt is made to use the nutrients in the sewage sludge disposed on dedicated land. The purpose of this disposal is to help degrade the organic materials in the sludge through soil organisms, sunlight, and by other natural processes.

Monitoring. The sewage sludge applied to land shall be monitored to determine the concentration of the following pollutants.

Aldrin/dieldrin (total)	Arsenic
Benzo(a)pyrene	Cadmium
Chlordane	Chromium
DDT/DDE/DDD (total)	Copper
Dimethyl nitrosamine	Lead
Heptachlor	Mercury
Hexachlorobenzene	Molybdenum
Hexachlorobutadiene	Nickel
Lindane	Selenium
Polychlorinated biphenyls	Zinc
Toxaphene	
Trichloroethylene	

These concentrations and the annual whole sludge application rate for the sewage sludge shall be used to determine both the amount of the organic and the amount of inorganic pollutants applied to each land application.

Sewage sludge applied to land shall be monitored to determine compliance with either Class A, Class B, or Class C pathogen reduction requirements. Either the volatile solids, the specific oxygen uptake rate (SOUR), the pH or the moisture content of the sewage sludge shall be monitored to determine compliance with the vector attraction reduction requirement. When vector attraction reduction is achieved by sub-surface injection, the sewage sludge does not have to be monitored for volatile solids, SOUR, pH, or moisture content.

Recordkeeping. The information required to be maintained by the POTW includes the user identification, the location of the site and its size, the amount of pollutants applied, record of compliance with pathogen and vector reduction requirements, certification that the individual utilizing the sludge was informed about access and use restrictions according to sludge class, certification that there is at least 10 meters from sewage sludge boundary to any surface water and a contract between the treatment works and the user of sewage sludge. The above information is required as both proof of compliance and to keep track of pollutant loading on the land.

The regulation sets annual limits for organic pollutants and cumulative loading limits for inorganic pollutants. Therefore, it is necessary for the user to keep track of the amount of pollutant he is applying. The pathogen and vector reduction requirements are based on certain access and use restrictions so the farmer must be informed of these requirements. The contract that is issued between the treatment works and the user of the sewage sludge is to assure that the user will maintain pollutant loading rates at non-hazardous levels.

The records, for the application of sludge to land used in agriculture, will be maintained for the life of the POTW. At the time the POTW ends operation the records will be transferred to the regulatory authority. This requirement is based on the premise that metals applied to land will accumulate indefinitely. The accumulation of a metal may reach a level that will be a health or environmental hazard. Therefore records must be maintained indefinitely to keep track of the level of the potential pollutants in the soil. Once the risk threshold level is attained no more sludge may be applied without additional testing.

For non-agricultural land EPA established numeric limits on the premise that pollutants would not reach individuals through the food chain. As a consequence one of the main requirement differences between use of sludge on agricultural and non-agricultural land is that POTW's do not have to keep track of annual and cumulative pollutant loading rates. Therefore the retention period for the record keeping of sludge applied to non-agricultural land is only five years, The five year retention

period of the records is the same as the time assumed to elapse between sludge application and the conversion of non-agricultural land to other uses.

Reporting. The information which has been recorded in the previous requirement shall be reported, as well as any other monitoring of the sewage sludge. Reporting of this information shall be done in the frequency stated in the general section. The contract between the treatment works and the user of the sewage sludge and the certification of the distance from the sewage sludge boundary to any surface water, only needs to be resubmitted after initial submission, when there are changes.

° Distribution and Marketing is the give-away or sale of sewage sludge or a product derived from sewage sludge either in containers (e.g., bags) or in bulk form.

Monitoring. Sewage sludge that is distributed and marketed shall be monitored prior to disbursement by the treatment works to determine the concentrations of the following pollutants.

Aldrin/dieldrin	Hexachlorobutadiene
Arsenic	Lead
Benzo(a)pyrene	Lindane
Cadmium	Mercury
Chlordane	Nickel
Chromium	PCB
Copper	Selenium
DDT/DDE/DDD (total)	Toxaphene
Heptachlor	Zinc
Hexachlorobenzene	

These concentrations shall be used to determine the appropriate whole sludge application rate (AWSAR) for the sewage sludge. When the treatment works is not the distributor a contract is needed with the distributor to ensure that the distributor determines the concentration in the end product to calculate the appropriate annual product application rate (APAR).

Sewage sludge that is distributed and marketed shall be monitored prior to disbursement by the treatment works to determine compliance with the Class A pathogen reduction requirements. Either the volatile solids in the sewage sludge, the SOUR of the sewage sludge, the pH of the sewage sludge, or the moisture content of the sewage sludge shall be monitored prior to disbursement by the treatment works to determine compliance with the vector reduction requirement.

Recordkeeping. The information required to be maintained by the POTW includes (1) the identification of the distributor, (2) the pollutant concentration in the sludge or the (3) sewage sludge product, (4) the appropriate sewage sludge or its (5) product application rate, results of the monitoring to determine compliance with the (6) pathogen or (7) vector attraction reduction, (8) the contract between the distributor of the product and the treatment works when applicable and a (9) copy the information sheet or label that must be distributed with the product.

The regulation cites maximum sewage sludge concentrations for various annual whole sludge application rates. Therefore, in order to comply with the regulation, the pollutant concentrations in the sewage sludge have to be determined and records maintained. If the POTW is not the distributor a contract is issued to the subsequent distributor to ensure that he is aware of the requirements and complies with them. The label or information sheet is used to inform the final product user of the appropriate utilization of the product.

The recordkeeping retention period for the distribution and marketing end use is five years. This is the same time as required by the NPDS program. To decide the numeric limit for this end use a 20 year life span was assumed for the use of a plot of land. The final numeric limit was given as an annual application rate rather than a cumulative loading rate. Therefore its not necessary to keep indefinite track of the pollutant loading rate.

Reporting. The information which has been recorded in the previous requirement shall be reported, as well as any other monitoring that has been conducted on the sewage sludge. Reporting of this information shall be done in the frequency stated in the general section. The contract between the treatment works and the distributor of the sewage sludge product and the label, only needs to be resubmitted when there are changes.

° Monofills are areas that contain one or more sewage sludge units where only sewage sludge is disposed and is covered at least at the end of the work day.

Monitoring. Sewage sludge that is placed in a monofill shall be monitored to determine the concentration of the following pollutants.

Arsenic
Benzene
Benzo(a)pyrene
Bis(2-ethylhexyl)phthalate
Cadmium
Chlordane
Copper
DDT/DDE/DDD (total)
Dimethyl nitrosamine
Lead
Lindane
Mercury
Nickel
Polychlorinated biphenyls
Trichloroethylene
Toxaphene

The air in any structure within a monofill and at the property line of the monofill shall be monitored continuously for methane gas. The run-off from the monofill that is treated shall be monitored to determine the volume of the run-off discharged and the concentration of pollutants in the discharge.

Recordkeeping. When sewage sludge is placed in a monofill, the records of the monitoring shall be kept. The volume of storm run-off water treated and discharged and the concentration of the pollutants in the discharge must be recorded. In addition, certification of various other parameters need to be kept. Such as certification that the run-off doesn't restrict the flow of a base flood; reduce the temporary water storage capacity of a floodplain; or present a hazard to human health, wildlife, or land and water resources.

The monofill must not be a bird hazard if the monofill is located either with 3,048 meters (10,000 feet) of aircraft runways used by turbo aircraft or 1,524 meters (5,000 feet) of an airport runway used only by piston-type aircraft. The monofill must be designed to withstand stress created by the maximum ground motion if the monofill is located in a seismic zone. Each new sewage sludge unit must be located 60 meters or more from a fault and located in areas that provide adequate support for the structural components of the unit. Finally, it must also be certified that the new sewage sludge unit is not in a wetland.

The record retention period for monofills will be ten years. The time period is in accord with the closure plan. The closure plan assumes that sewage sludge decomposes within 4 to 5 years so ten years provides a sufficient margin of safety for owners and operators to restrict the use of the land for other purposes.

Reporting. The information which has been recorded in the previous requirement shall be reported, as well as any other monitoring that has been on the sewage sludge. Reporting of this information shall be done at the frequency stated in the general section. The certifications required need only be submitted for the permit application.

° Incinerators are enclosed devices that treat combustible materials using controlled flame combustion. Type of incinerators include but are not limited to multiple hearth, fluidized bed, electric, or rotary kilns incinerators.

Monitoring. Sewage sludge that is incinerated in a sewage sludge incinerator shall be monitored to determine the concentration of mercury, beryllium, arsenic, cadmium, chromium, lead, and nickel. The following parameters shall be monitored continuously: (1) total hydrocarbon concentration in the incinerator stack, (2) rate at which sewage sludge is fed to the incinerator, (3) combustion temperature, (4) temperature and (5) oxygen content of the exit gas, and (6) pressure drop across the air pollution control system, if applicable.

Recordkeeping. Records must be kept for the concentrations of the metals monitored as well as the parameters monitored continuously. Records of the calibration and maintenance as well as original instrument chart recordings for continuous monitoring of instruments shall be saved. Results of site-specific air modeling and incinerator performance tests, if applicable shall also be recorded. These records are required to determine compliance.

The recordkeeping retention period for incinerators will be five years. This period is in accord with the retention time required for the NPDES program. No additional burden was deemed necessary beyond what was required to maintain a valid permit.

Reporting. When sewage sludge in incinerated in a sewage sludge incinerator all items monitored as mentioned above shall be reported except the continuous monitoring. Items that are monitored continuously only need to be reported when they are outside the allowable range for a specific period of time as follows. Combustion temperatures oxygen content, and exit gas temperature shall be reported when they exceed the allowable range for a period of 15 minutes or longer. When the pressure drop across the air pollution control device exceeds the allowable drop for longer than one hour, it shall also be reported. The other two items that need to be reported is the total hydrogen concentration and the sewage sludge feed rate.

° Surface Disposal Site is an area of land on which only sewage sludge is placed and on which sewage sludge remains for a period of one year or greater. No vegetative or other cover is established on a sewage sludge surface disposal site.

Monitoring, Recordkeeping and Reporting. The data collection requirements for surface disposal sites are identical to those of monofills except for the recordkeeping retention period. The retention period for records on the surface disposal sites is only tive years which is the time required in the NPDES

program. Surface disposal sites are not covered and are of a small size so a closure plan is not required. The closure plan extends the record retention period for monofills.

(b) Practical Utility of the Information Collected

The information required and collected from POTWs is specifically used to assure compliance with the standards set by the technical regulation. Each end use or disposal method uses the information to determine if the sludge meets the safety risk level set by the Agency. The following discussion gives an example of the practical utility of some of the information collected for each end use or disposal method of sludge.

Section 503.13(b) of the technical regulation request that sewage sludge not be applied to agricultural land at an annual whole sludge application rate (AWSAR) that causes the given annual pollutant rate (APLR) to be exceeded. The following procedure computes the AWSAR that will not cause the APLRs in the regulation to be exceeded.

The relationship between APLR and AWSAR is shown by the following equation.

$$APLR = C \times 0.001 \times AWSAR \qquad (1)$$

Where, APLR = annual pollutant loading rate in kilograms per hectare per 365 consecutive day period.

C = pollutant concentration in sewage sludge in milligrams per kilogram (dry weight basis). This is data from the information collection request.

AWSAR = annual whole sludge application rate in metric tons per hectare per 365 consecutive day period (dry weight basis).

Rearranging equation (1) to determine the pollutant concentration in the sewage sludge provides the following equation.

$$C = \frac{APLR}{.001 \times AWSAR} \qquad (2)$$

The APLR rates are given in Table 1 in 503.13 of the technical regulation. Because the APLR remains constant for any AWSAR, only the pollutant concentration varies as the AWSAR varies. As the AWSAR increases, the pollutant concentration decreases and vice versa. Therefore, the information collection request will provide the pollutant concentration which will be used to determine the annual whole sludge application rate.

Section 503.23 requires that sewage sludge that is distributed and marketed meet the pollutant limits for an applicable annual whole sludge application rate (AWSAR). Equations (1) and (2) in the land application section show the relationship between annual pollutant loading rate, annual whole sludge application rate, and pollutant concentration in sewage sludge. The regulations provide the annual pollutant rate and the information collection requests the pollutant concentration in sewage sludge. With these two variables the annual whole sludge application rate can be calculated.

Sections 503.33, 503.43, and 503.63 of the technical regulations set pollutant concentration limits on the sludge disposed in a sewage sludge surface disposal site, monofill or incinerator. To determine compliance, the sludge must be analyzed for pollutant concentration. As a consequence, the information collection request includes monitoring of the sludge's pollutant concentrations.

(c) Data Items Requested

A brief summary of the data items requested for each end-use is included in part (a) of this section. A complete listing of the exact requirements are found in Section I of Part 503 Sewage Sludge Technical Regulation. A copy of the regulation is included in Appendix A.

3. MINIMIZING BURDEN

EPA has taken steps to reduce respondent burden by paring down from its February 4, 1986 proposal the inventory requirements placed on States. Originally, States would have been required to submit an inventory of all sewage sludge generators and disposal facilities in the State, including firms which pump and service septic tanks and portable toilets. The current proposal limits the information collection requirements to all treatment works treating domestic sewage, in other words, all facilities that are required to obtain sludge permits under Section 405 of the CWA.

However, States would be required over time to complete the inventory of all sludge generators and disposal facilities (but not septage haulers). Such information is necessary for the State to assure compliance by these facilities with national sludge standards. The burden is reduced by not requiring respondents to comply with the inventory requirements all at once. Much of he information needed to complete the inventory can be more easily compiled during program administration. A complete inventory will be essential to implement and enforce effectively the technical standards applicable to sewage sludge generators and disposers.

The proposed rule also eliminates the requirement that a State submit an inventory of known violations. As with the facility inventory, this information will be needed by the States to administer adequately an approved program. However, it too can be complied with during the course of administering an on-going program (e.g., by using information gathered to compile the monthly, quarterly or annual compliance reports).

EPA has also considered the use of improved information technology as a means of reducing respondent burden. To assist POTWs in maximizing the effectiveness of their management practice(s) several software packages and user manuals were developed for monofilling and some are available for incineration.

For monofilling under various circumstances (e.g., where the sewage sludge unit boundary to the property line for the monofill is less than 150 meters) the pollutant limits for the sewage sludge placed in the sewage sludge unit must be determined using actual site measurements as variable parameters in simulation models. These simulation models have been programmed and an EPA approved computer program and a user manual will be available to the POTWs. The site-specific values for one or more of the following parameters may be used (1) depth to ground water, (2) soil type, (3) net ground water electromotive potential, (4) ground water pH and (5) partition coefficient for a pollutant.

For incineration one may calculate sludge concentrations with values and equations given in the technical sludge regulation. The equation to determine allowable concentration remains the same but the POTW owner/operator may generate site-specific values by using EPA approved air dispersion models such as Industrial Source Complex Long-Term (ISCLT) model. These may be supplied by EPA as well as the user manuals to assist the POTW owner/operator.

4. NON-DUPLICATION

Regarding the NPDES program, EPA has examined all other reporting requirements contained in the Clean Water Act programs. Also, States with EPA-approved solid waste management plans currently are required to provide EPA Regions with information on land application and landfill of hazardous waste under OMB Control number 2050-0041. However, like EPA, most States classify sewage sludge as non-hazardous waste;therefore, this information is generally not directly applicable. There are no OMB-approved information collection requirements for non-hazardous wastes. In addition, the following sources of information have been examined or consulted to determine whether duplicative information is available elsewhere:

- EPA Information Systems Inventory
- EPA Inventory of Information Collection Requests
- Federal Information Locator System

No duplicative reporting requirements were found from the examination of the sources listed above.

Under existing Federal and State regulations, some States or treatment works already collect some of the information on sewage sludge that Part 503 requires. An example of such a regulation is found in 40 CFR Part 257. In specific, this regulation states pathogen and vector attraction reduction levels. These requirements are similar to the requirements in the technical regulation of sludge so no incremental compliance costs were estimated for this regulation. Furthermore, the sludge management program, (Part 501) which will implement the technical sludge regulations, gives EPA the flexibility to accept from States information currently provided to support other programs that would also satisfy Part 503 reporting requirements. Consequently, a lesser burden will be borne by States that already collect some of the required data.

The Clean Water Act requires EPA to assess the need for additional controls on sewage sludge every two years. To develop the data base to support this effort, EPA may conduct research surveys of sludge constituents, technologies, and facilities from time to time. The data collected from these surveys would not duplicate the data collected from permittee application forms and monitoring reports. Each activity serves different purposes and, at present, requires different methods of data collection.

A source of possible duplication is a Clean Air Act regulation, New Source Performance Standards Monitoring Requirements for Sewage Treatment Plants, 40 CFR Part 60, Subpart O (OMB Control No. 2060-0035). The standards require sludge incinerator operators to monitor the mass and volume of sludge charged to the incinerator and to report the incidents of excess emissions to the State, which in turn reports to EPA. To the extent that these reports duplicate sludge monitoring report requirements in a POTW's permit, the permitting authority can allow the POTW to use the copies of these reports to satisfy the POTW's monitoring requirements under Section 503.

5. CONSIDERATION OF ALTERNATIVES

The proposed reporting requirements involve the submission of original data which are not available in any other report or application.

There are several existing violations reports that require information similar to data required by the sludge technical regulations proposed. The NPDES permit program requires States to submit quarterly non-compliance reports which provide information on wastewater treatment facilities that violate their Federal permit limits for wastewater. Although this information is similar to the reports required by 503, it does not address sludge limits and therefore could not satisfy the technical sludge regulation requirements. Sludge reporting requirements will be met through sludge compliance program reports whether a State program is run as part of NPDES or under Part 501.

6. IMPACT ON SMALL BUSINESSES

Certain basic information is needed by EPA to determine compliance with regulation standards and permit conditions. Therefore, all POTWs are subject to monitoring and reporting requirements, regardless of size. However, the impact of these requirements on small businesses are subject to the frequency of monitoring and reporting that is imposed. The provision made to reduce the burden on the small business was to base the frequency of monitoring and reporting on the volume of wastewater processed. Since small POTWs that are classified as small business usually process relatively small volumes of wastewater, their monitoring and reporting burden, therefore, will be smaller.

Exhibit 1 presents the estimated cost of each end use according to size of the POTW. The figures were derived from Exhibits 2 through 6 found in section 12. It is evident that cost to smaller POTWs is in every case less than the average spent by all POTWs. The cost is incremental depending on the volume processed by the POTWs.

7. CONSIDERATION OF LESS FREQUENT COLLECTION

The frequency of monitoring and reporting are as follows:

Treatment Works Design Capacity (million gallons per day wastewater)	Frequency of Monitoring & Reporting
less than 1.0	once per year
1.0 to 10.0	once per quarter
greater than 10.0	once per month

EPA must have current information on the individual POTWs to protect public health and the environment. Sludge quality can vary and the impact of this change depends on the amounts of sludge generated into the environment. Therefore, the larger the

volume of wastewater processed the greater the deleterious environmental impact if the sludge quality deteriorates. It is more important to control the quality of the sludge in POTWs processing larger quantities of sludge. Based on this premise the frequency of monitoring was established on the volume of sludge processed. The smaller the volume processed the less frequent monitoring and reporting required.

In specific cases such as in incineration, some parameter monitoring information is only requested when non-compliance is recorded for given time intervals. In these cases, the frequency of the information collection is determined by non-compliance. This frequency is the minimum that EPA can allow to determine if the POTW operators are meeting their commitment to the Agency.

Those parameters which are likely to remain the same, only need to be reported once, unless changes occur (such as the distance from the boundary of a monofill unit to a surface body of water). This information, provided on as needed basis, cannot be further reduced.

The ability of EPA to ensure that the provisions of the CWA are executed, depends on current information from POTWs processing wastewater. Less frequent reporting would not provide EPA with data current enough to allow the Agency to intervene in a timely basis when necessary.

8. PAPERWORK REDUCTION ACT GUIDELINES

Of the Paperwork Reduction Act (PRA) guidelines contained in 5 CFR 1320.6, the only guideline which is commonly exceeded by the reporting process relates to the suggestion that respondents not be required to report information to the agency more often than quarterly. In a number of cases, EPA requires permittees to submit their reports on a monthly basis.

While reporting frequencies vary among permittees, a number of permittees (particularly major POTWs) are required to report on a monthly basis. Monthly reporting is necessary to achieve the goal of early detection and resolution at facilities where risks of potential health and environmental problems are highest. Less frequent reporting by these significant dischargers would clearly inhibit the achievement of this goal.

It should be noted again that the major burdens imposed on permittees by the data collection process relate not to reporting frequencies, but rather to the number and type of parameters monitored and the frequency with which these monitoring activities must take place. For this reason, reducing the frequency of permittee reporting would have little, if any, impact on overall burdens.

EXHIBIT 1

COMPARISON OF THREE YEAR COST ACCORDING TO SIZE OF FACILITY

	LAND APPLICATION				DISTRIBUTION AND MARKETING			
SIZE (MGD)	APP.	MON.	REC.	TOTAL	APP.	MON.	REC.	TOTAL
	$	$	$	$	$	$	$	$
(0-1)	1205	1730	119	3100	1426	2003	27	3500
(1-10)	1205	9515	283	11000	1426	11017	105	12500
(>10)	1205	30276	2559	34000	1426	35071	309	36800
AVERAGE	1205	4061	212	5500	1425	14877	142	16400

	MONOFILL				INCINERATION			
SIZE (MGD)	APP.	MON.	REC.	TOTAL	APP.	MON.	REC.	TOTAL
	$	$	$	$	$	$	$	$
(0-1)	975	1610	18	2600	9360	68584	23	78000
(1-10)	975	8855	94	9900	9360	69682	94	79100
(>10)	975	28176	299	29500	9360	72611	298	82300
AVERAGE	980	10388	102	11500	9361	71308	207	80900

	SURFACE DISPOSAL			
SIZE (MGD)	APP.	MON.	REC.	TOTAL
	$	$	$	$
(<1)	2336000	3856000	41000	2600
AVERAGE	975	1610	17	2600

APP. = APLLICATION COST
MON. = MONITORING COST
REC. = RECORDKEEPING COSTS

9. CONSULTATIONS

The proposed regulation information requirements in Part 503 will be subjected to the same review as were the other requirements and procedures contained in the proposed technical sludge regulation. In addition, the proposed data collection requirements for Part 503 will be subjected to notice and comment when Part 503 is proposed. Similarly, all data collection requirements covered in this ICR will be subject to notice and comment as part of the rulemaking process.

10. CONFIDENTIALITY

Information submitted by this requirement is unlikely to be confidential. For, Section 308(b) of the CWA specifically excludes "effluent data" from protection as confidential information. However, to the extent that questions of confidentiality do arise, they will be handled pursuant to 40 CFR Part 2.

11. SENSITIVE QUESTIONS

No questions of a sensitive nature are associated with this information collection activity.

12. COST TO THE GOVERNMENT AND TO THE RESPONDENTS

(a) Cost to the Federal Government.

The only major cost to the Federal government is incurred in evaluating the information reported by the POTWs. However, this cost is covered by Part 501 the sewage sludge management program which implements the sewage sludge technical regulation. Therefore, this ICR does not cover any costs to the government all costs are incurred by the respondents.

(b) Costs to the Respondents

This section estimates the cost to the respondents of the information collection requests in the sewage sludge technical regulation. The regulation applies to any person(s) who either uses or disposes of sewage sludge treated or generated during the treatment of domestic sewage at a treatment works. This would include privately or publicly owned (POTWs) treatment works. The information for publicly owned treatment works (POTWs) has been more extensively compiled in the EPA 1984 Needs Survey and Summaries of Technical Data. The values used on this estimate are based on these data and as used in the Regulatory Impact Analysis of the Regulation for Sewage Sludge Disposal (EPA, 1988). Information for generation and disposal of sewage sludge in privately owned treatment works is very sparse and scarce. Therefore, general assumptions had to be made.

To determine the number of privately owned treatment works, the following analysis was performed.

25	Major privately owned treatment works.	The number was retrieved from PCS.
125	Privately owned non-discharging treatment works.	Data available indicates less than 100 POTWs so a conservative estimate of 125 for privately owned treatment work was made.
850	Minor (<1 MGD) privately owned treatment works.	In addition, there are privately owned treatment works that process less than 1 MGD that use or dispose of sewage sludge and are covered by the regulation. This is our best estimate based on limited data available to EPA.
1,000	Total universe of privately owned treatment works.	
-330	Disposed at a POTW.	One third is assumed to go to a POTW, therefore, it's already covered in a separate segment of this ICR (.33 x 1000 = 330).

-270	Disposed at a Municipal Landfill.	Forty percent of the remaining number will go to a co-disposal landfill and is not covered by this regulation (.4 x 670 = 268).
400	Number of private respondents.	The most likely end use or disposal method used for these treatment works will be land application. This is based on the fact that there are few monofills nationwide and incinerators are usually associated with large urban area POTWs. Fifty of the PrOTWs will be assumed to be in the (1-10) MGD size category. This includes 25 major PrOTWs and 25 from the non-discharging PrOTWs. The remaining 350 will be considered in a (0-1) MGD size category.

The cost to the respondents was determined by analyzing the specific requirement (monitoring, recordkeeping, and reporting) for each end use. As stated in Section (a) the reporting costs are not included in this ICR because they have been covered in the ICR for Part 501 sewage sludge management program. A cost that was explicitly left out of the ICR for Part 501 was the incremental application cost directly attributed to Part 503. Therefore, the cost for the application procedure attributed to Part 503 is included in this ICR.

In summary, the costs for Part 503 Sewage Sludge Technical Regulation was estimated in the following series of tables. Each table is attributed to an end use then further divided to expenses incurred in the first year or the second and third year of the period covered by the ICR. Each year is then subdivided into the type of requirement that is applicable (e.g., application, monitoring, or recordkeeping). The tables are accompanied with an explanation of the origin or reference of the values in the table columns used to determine the hourly burden and costs. Final Exhibits 7, and 8 summarize the hourly burden and costs for the three year period of the ICR for the technical sewage sludge regulation. The numbers in all the tables may not match exactly due to rounding errors.

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EXHIBIT 2 LAND APPLICATION

ANNUAL COSTS FOR FIRST YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
SIZE MGD	POTW'S OR PROTW'S	SAMPLE FREQ.	APPLICATION COSTS: HRS TO SAMPLE 82x3+8HRS 1	CONTRACT ORIGINAL 2xHRS 20	METALS ($15*10) 2x5+$ 150	ORGANICS 2x3+$ 698	PATHOGEN VECTOR REQ.	MONITORING COSTS: SAMPLE & ACCT. FREQ.	HRS TO SAMPLE 2x9+HRS 1	METALS ($15*10) 2x9+$ 150	ORGANICS 2x9+$ 698	RECORDKEEPING COSTS: ACCT HOURS 2x9+HRS 0.5	MASS MT/YR	#SITES MASS/80*5 14/kg-ha 400	CONTRACT & CERT. FREQ.	CONTRACT HOURS 15+HRS 1	CERT HOURS 15+HRS 1	TOTALS: EXPENSES INCURRED 6+7+11+12	DIRECT LABOR 4+5+10+13	TOTAL COST 19+20+$ 17.02	TOTAL HOURS 20+19/$ 17.02
			HRS	HRS	$	$			HRS	$	$	HRS				HRS	HRS	$	HRS	$	HRS
(0-1)	1960	1	1960	39200	294000	1368080	NO ADD.	0	0	0	0	0	126175	1960	1/YR	1960	1960	1662080	45080	2429000	143000
PR(0-1)	350	1	350	7000	52500	244300	INCRE.	0	0	0	0	0	22560	350	1/YR	350	350	296800	8050	434000	25600
(0-10)	591	1	591	11820	88650	412518	COSTS	3	1773	265950	1237554	887	438318	1096	1/YR	1096	1096	2004672	17263	2998000	176000
PR(0-10)	50	1	50	1000	7500	34900		3	150	22500	104700	75	37083	93	1/YR	93	93	169600	1461	104000	11000
(>10)	72	1	72	1440	10800	50256		11	792	118800	552816	396	637665	1594	1/YR	1594	1594	732672	5888	853000	49000
TOTALS	3023		3023	60660	453450	2110054			2715	407250	1895070	1358	1281781	5093		5093	5093	4865824	77762	6819000	364000

ANNUAL COSTS AFTER FIRST YEAR

23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
SIZE MGD	POTW'S OR PROTW'S	SAMPLE & ACCT. FREQ.	MONITORING COSTS: HRS TO SAMPLE 26x25+8HRS 1	METALS ($15*10) 26x25+$ 150	ORGANICS 24x25+$ 698	RECORDKEEPING COSTS: ACCT HOURS 24x25+HRS 0.5	MASS MT/YR	#SITES MASS/5*80 30/KG-HA 400	CONTRACT & CERT. FREQ.	CONTRACT HOURS 31*HRS 1	CERT HOURS 31*HRS 1	TOTALS: EXPENSES INCURRED 27+28	DIRECT LABOR 26+29+ 33+34	TOTAL COST 35+36+$ 17.02	TOTAL HOURS 36+35/$ 17.02
			HRS	$	$	HRS				HRS	HRS	$	HRS	$	HRS
(0-1)	1960	1	1960	294000	1368080	980	126175	1960	1/YR	1960	1960	1662080	6860	1779000	105000
PR(0-1)	350	1	350	52500	244300	175	22560	350	1/YR	350	350	296800	1225	318000	19000
(0-10)	591	4	2364	354600	1650072	1182	438318	1096	1/YR	1096	1096	2004672	5758	2102000	124000
PR(0-10)	50	4	200	30000	139600	100	37083	93	1/YR	93	93	169600	486	178000	10000
(>10)	72	12	864	129600	603072	432	637665	1594	1/YR	1594	1594	732672	4484	809000	48000
TOTALS	3023		5738	860700	4005124	2869	1281781	5093		5093	5093	4865824	18793	5186000	306000

TOTAL COSTS DISTRIBUTED BY SIZE AND TYPE OF REQUIREMENT

		39	APPLICATION COSTS: 40	41	42	43	MONITORING COSTS: 44	45	46	47	RECORDKEEPING COSTS: 48	49	50
			EXPENSES INCURRED 6+7	DIRECT LABOR 4+5	TOTAL COST 40+41+$	TOTAL HOURS 40+41/$	EXPENSES INCURRED	DIRECT LABOR	TOTAL COST 44+45+$	TOTAL HOURS 45+44/$	DIRECT LABOR	TOTAL COST 48+$	TOTAL/POTW (42+46+49)/2
			$	HRS	$	HRS	$	HRS	$	HRS	HRS	$	$
FIRST YEAR	(0-1)		1662080	41160	2362623	138815	0	0	0	0	3920	66718	1219
	PR(0-1)		296800	7350	421897	24788	0	0	0	0	700	11916	1239
	(0-10)		501168	12411	712403	41857	1503504	1773	1535680	90110	3079	52405	1889
	PR(0-10)		42600	1050	60271	3541	127200	150	129753	7624	261	4462	1889
	(>10)		61056	1512	86790	5099	671616	792	685096	40252	3586	61000	11568
SECOND YEAR	(0-1)						1662080	1960	1695639	99615	4900	83398	908
	PR(0-1)						296800	350	302757	17788	875	14893	908
	(0-10)						2004672	2364	2044907	120167	5374	57425	3557
	PR(0-10)						169600	200	173006	10165	286	4868	3557
	(>10)						732672	864	747377	43912	3620	61612	11236
THIRD YEAR	(0-1)						1662080	1960	1695639	99615	4900	83398	908
	PR(0-1)						296800	350	302757	17788	875	14893	908
	(0-10)						2004672	2364	2044907	120167	5374	57425	3557
	PR(0-10)						169600	200	173006	10165	286	4868	3557
	(>10)						732672	864	747377	43912	3620	61612	11236
THREE YEAR TOTAL PER SIZE	(0-1)		1662080	41160	2362623	138815	3324160	3920	3390878	199230	13720	233514	3100
	PR(0-1)		296800	7350	421897	24788	593600	700	605514	35576	2450	41700	3100
	(0-10)		501168	12411	712403	41857	5512848	6501	5623496	330406	9827	167255	11000
	PR(0-10)		42600	1050	60271	3541	664400	550	675761	27956	833	14178	11000
	(>10)		61056	1512	86790	5099	2136960	2520	2179850	128076	10824	184224	34000
THREE YEAR TOTAL			2564000	63000	3644000	214000	12934000	14000	12275000	721000	38000	641000	

TOTAL COST

APPLICATION	3644000
MONITORING	12275000
RECORDKEEPING	641000
TOTAL	16560000

@ DIGITS IN THE EQUATIONS REFER TO COLUMN NUMBERS THE HRS $, %, ETC. REFER TO VARIABLES USUALLY FOUND IN THE ROW FOLLOWING THE EQUATION.

Exhibit 2. Land Application

Columns	Description
1,23,39	Breakdown of wastewater treatment capacity in million gallons per day of design capacity. These are the same intervals used for monitoring and reporting frequency requirements.
Annual Costs For First Year	
Application	
2,24	Number of facilities in each class category. Source of information is from Needs Survey. Summaries of Technical Data, (EPA, 1984).
3	Frequency of sampling for the permit application procedure is just once regardless of the POTW capacity. So the frequency of sampling for application purposes is once for the lifetime of the ICR report.
4	This is the total number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container, go to the site of collection, collect the sample and submit sample for analysis. the calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 3) by the time (1 hour) required to sample.

Columns	Description
5	Total number of hours spent in writing the original contract which will be signed between the POTW and the user (e.g., farmer) of the sewage sludge. It is assumed that the cost of implementing a contract system primarily include only labor costs for the assistant superintendent and clerical staff

Columns	Description
	to prepare a generic contract. Sixteen hours of the superintendents and 4 hours of a clerical staff person's time were assumed to be needed. Hourly labor rates are 14.42 and 10.49 respectively according to the Regulatory Impact analysis. The weighted cost per hour would be (16 x 14.42) + (4(10.49))/20 = $13.63/hour. The calculation of the values are determined by multiplying the number of POTWs (column 2) times the number of hours (20).
6	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (10) regulated times the cost of the test ($15) times the number of POTWs (column 2) and the number of times each was sampled (column 3). The cost of the test was estimated for the Regulatory Impact Analysis (RIA) of the Proposed Regulation for Sewage Sludge Use and Disposal, EPA, 1988. It was determined by inquiries made to several testing laboratories resulting in an average cost of $15.
7	The actual dollar cost for testing the concentration of the regulated organic pollutants was determined same as the metals. The calculation was done by multiplying the cost ($698 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are not composted) times the number of POTWs (column 2) and the number of times each was sampled (column 3).

Columns	Description
8	The pathogen reduction requirements that define Class A, B, and C sludge are similar to existing regulations (40 CFR Part 257) defining levels of pathogen and vector attraction reduction. The existing regulations define Processes to Significantly Reduce Pathogens (PSRP) and Processes to Further Reduce Pathogens (PFRP). Class B pathogen reduction corresponds approximately with PSRP; PFRP corresponds approximately to Class A pathogen reduction; Class C requirements are less stringent than PSRP. Appendix B presents a comparison of the pathogen reduction classes in the proposed regulations to those in the existing regulations. Due to the similarities no incremental costs are associated with meeting new pathogen and vector attraction reduction requirements. Other assessment use and restrictions such as working periods before harvesting are not easily estimated. However, many of these operating procedures are specified in 40 CFR Part 257, current EPA guidance documents regarding land application of sewage sludge, and in current State requirements. No incremental compliance costs were estimate for these actions.
Monitoring	
9	Frequency of sampling, and accounting for pollutant loading rates is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr) depending on the size of the POTW. The first year the sewage sludge must be tested initially for the permit so the subsequent sampling for that year would be one less than what would be expected annually (11/yr, 3/yr, 0/yr, respectively).
10	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory

Columns	Description
	technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 9) by the time (1 hour) required to sample.
11	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (10) regulated times the cost of the test ($15) times the number of POTWs (column 2) and the number of times each was sampled (column 9). The cost of the test was estimated for the RIA by inquiries made to several testing laboratories resulting in an average cost of $15.
12	These expenses are incurred by sending sewage samples to a commercial laboratory for analysis of the concentration of the organic pollutants. The calculation was done by multiplying the cost ($698 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are not composted) times the number of POTWs (column 2) and the number of times each was sampled (column 9).
Recordkeeping	
13	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested.

Columns	Description
	It is assumed that it takes at least half an hour for calculating the pollutant loading rate and filing the information. The total number of hours is determined by multiplying the number of POTWs (column 2) times the frequency (column 9) times (.5) hours.
14	The mass of sludge that is produced by the POTWs is expressed in dry metric tons. Source of information is from the Needs Survey, Summaries of Technical Data, (EPA, 1984).
15	The technical sewage sludge regulations requires that pollutant loading rates to specific sites be recorded. Therefore, its necessary to estimate number of sites. It is assumed that a typical agricultural sludge application is 5 metric tons per hectare and each site is approximately 80 hectares. One site is necessary for at least each POTW or several sites per POTW depending on the mass of sewage sludge produced. The mass is divided by 5 metric tons per hectare to determine the number of hectares required. The quotient is then divided by 80 hectares per site to determine the number of sites. The number used in this column is the number of POTWs or sites whichever is larger.
16	The frequency of issuing the contract or certification is assumed to be once a year. This assumption is made because the mass of sewage sludge is produced yearly so the given number of sites will be required each year. It is likely that some sites would be re-used so this calculation might be a slight over-estimation in the early years.
17	The time assumed for filing a contract and getting the required signatures was assumed to be approximately one hour. The calculation was done by multiplying number of sites (column 15) requiring a contract by the time required for filing contract (1 hour).

Columns	Description
18	The time assumed for filing a certification was assumed to be approximately one hour. The calculation was done by multiplying the number of sites (column 15) requiring a certification by the time required for filing a certification (1 hour).
19	The expenses incurred the first year is the sum of columns 6, 7, 11 and 12.
20	In addition to the expenses incurred, (column 19) direct labor (columns 4, 5, 10, 13, 17 and 18) for the POTW employees is also incurred.
21	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are 14.42 and 10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x 14.42) + (10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision of the Water Pollution Control Federation's Personnel Advancement Committee in October 1985. The committee found that the average salary for a laboratory technician is $16,400. Dividing the annual salary by 2080 working hours in a year, an hourly wage of $7.88 is calculated. Since the survey was performed in 1984, an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for

Columns	Description
	inflation an hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was 17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.
22	In order to compute the total burden to respondent in number of hours, the total cost is divided by an hourly cost of a laboratory technician. The assumption was made that the hourly cost of report writing is approximately the same as a lab technician's time. This figure is determined by dividing the total cost (column 21) by the hourly wage ($17.02) of a laboratory technician.

Annual Costs After First Year

Monitoring

25	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr), depending on the size of the POTW.
26	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container, go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 24) by the sample frequency (column 25) by the time (1 hour) required to sample.
27	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental

Columns	Description
	cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (10) regulated times the cost of the test ($15) times the number of POTWs (column 24) and the number of times each was sampled (column 25). The cost of the test was estimated for the Regulatory Impact Analysis (RIA) of the Proposed Regulation for Sewage Sludge Use and Disposal, EPA, 1988. It was determined by inquiries made to several testing laboratories resulting in an average cost of $15.
28	The actual dollar cost for testing the concentration of the regulated organic pollutants was determined same as the metals. The calculation was done by multiplying the cost ($698 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are not composted) times the number of POTWs (column 24) and the number of times each was sampled (column 25).
Recordkeeping	
29	Once the test results are available, a simple calculation has to be performed to keep track of the pollutant's loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for calculating the pollutant loading rate and filing the information. The total number of hours is determined by multiplying the number of POTWs (column 24) times the frequency (column 25 times (.5) hours.
30	The mass of sludge that is produced by the POTWs is expressed in dry metric tons. Source of information is from the Needs Survey, Summaries of Technical Data, (EPA, 1984).

Columns	Description
31	The technical sewage sludge regulation requires that pollutant loading rates to specific sites be recorded. Therefore, its necessary to estimate number of sites. It is assumed that a typical agricultural sludge application is 5 metric tons per hectare and each site is approximately 80 hectares. One site is necessary for at least each POTW or several sites per POTW depending on the mass of sewage sludge produced. The mass is divided by 5 metric tons per hectare to determine the number of hectares required. The quotient is then divided by 80 hectares per site to determine the number of sites. The number used in this column is the number of POTWs or number of sites whichever is larger.
32	The frequency of issuing the contract or certification is assumed to be once a year. This assumption is based on the fact that the mass of sewage sludge is produced yearly. Therefore, the number of sites calculated will be required each year. It is likely that some sites would be re-used so this calculation might be a slight over-estimation in the early years.
33	The time assumed for filing a contract and getting the required signatures was assumed to be approximately one hour. The calculation was done by multiplying the number of sites (column 31) requiring a contract by the time required for filing contract (1 hour).
34	The time assumed for filing a certification and getting the required signatures was assumed to be approximately one hour. The calculation was done by multiplying the number of sites (column 31) requiring a certification by the time required for filing a certification (1 hour).
35	The expenses incurred for the second or third year is the sum of columns 27 and 28.

Columns	Description
36	In addition to the expenses incurred (column 35) direct labor (sum of columns 26, 29, 33, and 34) for the POTW employees is also incurred.
37	To compute the total cost the expenses incurred (column 35) must be added to the cost of direct labor (column 36). As explained in column 27 the cost for direct labor was assumed to be $17.02 per hour.
38	To compute the burden hours the total cost (column 37) is divided by the hourly wage ($17.02).
39-50	These columns are a summation of the previous cost estimates. On the last row on average cost is calculated for all the POTW's in each end use or disposal.

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EXHIBIT 5 DISTRIBUTION AND MARKETING

ANNUAL COSTS FOR FIRST YEAR

		APPLICATION COSTS								MONITORING COSTS				RECORDKEEPING COSTS				TOTALS			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
SIZE MGD	POTW'S	SAMPLE FREQ.	HRS TO SAMPLE @2x3xHRS 1	HRS LABELS 2xHRS 1	LABEL $ 2x$ 20	CONTRACT HRS 2x10%xHRS 0.1 20	METALS ($10^{*}9$) 2x3x$ 162	ORGANICS 2x3x$ 823	PATHOGEN VECTOR REQ.	SAMPLE & ACCT. FREQ.	HRS TO SAMPLE 2x11xHRS 1	METALS ($10^{*}9$) 2x11x$ 162	ORGANICS 2x11x$ 823	ACCT HOURS 2x11xHRS 0.5	# DIST. 2x10% 0.1	CONTRACT & CERT. FREQ.	CONTRACT HOURS 16xHRS 1	CERT HOURS 16xHRS 1	EXPENSES INCURRED 6+8+9+ 13+16	DIRECT LABOR 4+5+7+12+ 15+18+19	TOTAL COST 20+21x$ 17.02	TOTAL HOURS 21+20/$
			HRS	HRS	$	HRS	$	$			HRS	$	$	HRS			HRS	HRS	$	HRS	$	HRS
(0-1)	32	1	32	640	3600	64	5184	26336	NO ADD.	0	0	0	0	0	3	1/YR	3	3	33120	742	46000	3000
(1-10)	45	1	45	900	2250	90	7290	37035	INCRE.	3	135	21870	111105	68	5	1/YR	5	5	179550	1248	201000	12000
(>10)	29	1	29	580	1450	58	4698	23867	COSTS	19	319	51678	262537	160	3	1/YR	3	3	344280	1152	364000	21000
TOTALS	106		106	2120	5300	212	17172	87238			656	73548	373642	228	11		11	11	556900	3142	611000	36000

ANNUAL COSTS AFTER FIRST YEAR

		MONITORING COSTS				RECORDKEEPING COSTS					TOTALS			
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
SIZE	POTW'S	SAMPLE & ACCT. FREQ.	HRS TO SAMPLE 25x26xHRS 1	METALS ($10^{*}9$) 25x26x$ 162	ORGANICS 25x26x$ 823	ACCT HOURS 25x26xHRS 0.5	# DIST. 25x10% 0.1	CONTRACT & CERT. FREQ.	CONTRACT HOURS 31xHRS 1	CERT HOURS 31xHRS 1	EXPENSES INCURRED 28+29	DIRECT LABOR 27+30+ 33+34	TOTAL COST 35+36x$ 17.02	TOTAL HOURS 36+35/$
			HRS	$	$	HRS			HRS	HRS	$	HRS	$	HRS
(0-1)	32	1	32	5184	26336	16	3	1/YR	3	3	32000	56	33000	2000
(1-10)	45	6	180	29160	148140	90	5	1/YR	5	5	177000	280	182000	11000
(>10)	29	12	348	56376	286404	174	3	1/YR	3	3	343000	528	352000	21000
TOTALS	106		560	90720	460880	280	11		11	11	552000	862	567000	34000

TOTAL COSTS DISTRIBUTED BY POTW SIZE AND TYPE OF REQUIREMENT

			APPLICATION COSTS				MONITORING COSTS				RECORDKEEPING COSTS			
		39	40	41	42	43	44	45	46	47	48	49	50	TOTAL COST
			EXPENSES INCURRED 6+8+9	DIRECT LABOR 4+5+7	TOTAL COST 40+41x$	TOTAL HOURS 41+40/$	EXPENSES INCURRED	DIRECT LABOR	TOTAL COST 44+45x$	TOTAL HOURS 45+44/$	DIRECT LABOR	TOTAL COST 48x$	TOTAL/POTW (42+46+49)/2	
			$	HRS	$	HRS	$	HRS	$	HRS	HRS	$	$	
FIRST YEAR	(0-1)		33120	736	45667	2682	0	0	0	0	6	102	1450	APPLICATION 551000
	(1-10)		66575	1035	84191	3771	179550	1248	201000	12000	78	1328	6662	MONITORING 1577000
	(>10)		30015	667	41367	2431	344280	1152	364000	21000	166	2825	12546	RECORDKEEPING 95000
SECOND YEAR	(0-1)						31520	32	32065	1884	22	376	1016	TOTAL 1763000
	(1-10)						177300	180	180364	10597	100	1702	6046	
	(>10)						342780	348	348703	20488	180	3064	12130	
THIRD YEAR	(0-1)						31520	32	32021	1884	22	376	1012	
	(1-10)						177300	180	180121	10597	100	1702	6043	
	(>10)						342780	348	348703	20488	180	3064	12130	
THREE YEAR TOTAL PER POTW SIZE	(0-1)		33120	736	45667	2682	63040	66	64086	3768	50	851	3500	
	(1-10)		66575	1035	84191	3771	685775	495	695758	29142	278	4732	12500	
	(>10)		30015	667	41367	2431	999775	1015	1017050	50757	526	8953	56800	
THREE YEAR TOTAL			110000	2000	151000	9000	1550000	2000	1577000	93000	1000	15000		
COST PER POTW FOR THREE YEARS	(0-1)				1426				2005			27	$	
	(1-10)				1426				11017			105	12500	
	(>10)				1426				35071			309	56800	
AVERAGE					1425				14877			142	16600	

a DIGITS IN THE EQUATIONS REFER TO COLUMN NUMBERS THE HRS $, $, ETC. REFER TO VARIABLES USUALLY FOUND IN THE ROW FOLLOWING THE EQUATION.

Exhibit 3. Distribution and Marketing

Columns	Description
1,24,39	Breakdown of wastewater treatment capacity in million gallons per day of design capacity. These are the same intervals used for monitoring and reporting frequency requirements.
Annual Costs for First Year	
Application	
2,25	Number of facilities in each class category. Source of information is from the Needs Survey, Summaries of Technical Data, (EPA, 1984).
3	Frequency of sampling for the permit application procedure is just once regardless of the POTW capacity. So the frequency of sampling for application purposes is once for the lifetime of the ICR report.
4	This is the total number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container, go to the site of collection, collect the sample and submit sample for analysis. the calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 3) by the time (1 hour) required to sample.
5	The POTW must develop and distribute a handout to users of the composted or heat treated sludge. Bagged sludge products must have labels with the same printed information. The name and address of the producer, a description of the product, recommended soil pH, instructions for proper use of the product, plant nutrient values and several prohibitions must be included in the handout or on the label. A few States already require labeling, but all the required information may not

Columns	Description
	be included on the existing handouts or labels. Additions may have to be made to comply with the proposed regulations in these circumstances. The majority of POTWs using distribution and marketing will have to develop this material. It was assumed that 16 hours of the assistant superintendent's and 4 hours of a clerical staff person's time would be needed to fulfill labeling requirements each year. Hourly labor rates are $14.42 and $10.49, respectively.
6	In addition to hours spent in fulfilling the labeling requirements copy charges for 500 one-page printed handouts at $0.10 per page is also allotted. The cost is calculated by multiplying number of POTWs (column 2) by 500 times $0.10.
7	According to the RIA it was assumed that 10% of the POTWs will have a contractual agreement with a distributor (Section 3, p. 3-43). Therefore 10% of the POTWs will incur the hourly burden of preparing a generic contract. Sixteen hours of the superintendent's and 4 hours of a clerical staff person's time were assumed to be needed.
8	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (9) regulated times the cost of the test ($18) times the number of POTWs (column 2) and the number of times each was sampled (column 3). The cost of the test was estimated for the Regulatory Impact Analysis (RIA) of the Proposed Regulation for Sewage Sludge Use and Disposal, EPA, 1988. It was determined by inquiries made to several testing laboratories

Columns	Description
	resulting in an average cost of $18 per metal in a composted sludge.
9	The actual dollar cost for testing the concentration of the regulated organic pollutants was determined to be the same as the metals. The calculation was done by multiplying the cost ($823 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are composted) times the number of POTWs (column 2) and the number of times each was sampled (column 3).
10	The pathogen reduction requirements that define Class A, B, and C sludge are similar to existing regulations (40 CFR Part 257) defining levels of pathogen and vector attraction reduction. The existing regulations define Processes to Significantly Reduce Pathogens (PSRP) and Processes to Further Reduce Pathogens (PFRP). Class B pathogen reduction corresponds approximately with PSRP; PFRP corresponds approximately to Class A pathogen reduction; Class C requirements are less stringent than PSRP. Appendix B presents a comparison of the pathogen reduction classes in the proposed regulations to those in the existing regulations. Therefore, it is assumed that no incremental costs are associated with meeting new pathogen and vector attraction reduction requirements. Other assessment use and restrictions such as working periods before harvesting are not easily estimated. However, many of these operating procedures are specified in 40 CFR Part 257, current EPA guidance documents regarding land application of sewage sludge, and in current State requirements. No incremental compliance costs were estimate for these actions.
Monitoring	
11	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr) depending on the size of

Columns	Description
	the POTW. The first year the sewage sludge must be tested initially for the permit so the subsequent sampling for that year would be one less than what would be expected annually (11/yr, 3/yr, 0/yr, respectively).
12	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 11) by the time (1 hour) required to sample.
13	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (9) regulated times the cost of the test ($18) times the number of POTWs (column 2) and the number of times each was sampled (column 11). The cost of the test was estimated for the RIA by inquiries made to several testing laboratories resulting in an average cost of $18 for composted sludge.
14	These expenses are incurred by sending sewage samples to a commercial laboratory for analysis of the concentration of the organic pollutants. The calculation was done by multiplying the cost ($823 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are composted) times the number of POTWs (column 2) and the number of times each was sampled (column 11).

Columns	Description
Recordkeeping	
15	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for the calculation of the pollutant loading rate and time to file the information. The total number of hours is determined by multiplying the number of POTWs (column 2) times the frequency (column 11) times (.5) hours.
16	This column represents the number of distributors which will contract with a POTW to disburse the sludge. It was assumed that 10% of the POTWs would use a distributor (see column 7).
17	The assumption was made that the distributors would enter into a contract for at least a year.
18	The time assumed for filing a contract and getting the required signatures was assumed to be approximately one hour. The calculation was done by multiplying number of distributors (column 16) requiring a contract by the time required for filing contract (1 hour).
19	The time assumed for filing a certification and getting the required signatures was assumed to be approximately one hour. The calculation was done by multiplying number of distributors (column 16) requiring a certification by the time required to file (1 hour).
20	The expenses incurred for the first year is the sum of columns 6, 8, 9, 13 and 14.

Columns	Description
21	In addition to the expenses incurred (column 20) direct labor (sum of columns 4, 5, 7, 12, 15, 18 and 19) for the POTW employees is also incurred.
22	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are $14.42 and $10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x 14.42) + (10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision the Water Pollution Control Federation's Personnel Advancement Committee in October 1985. It published an annual salary of $16,400 for a laboratory technician. Dividing the annual salary by 2080 working hours in a year an hourly wage of $7.88 is calculated. Since the survey was performed in 1984 an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for inflation a hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was $17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.

Columns	Description
23	To compute the total burden hours, the total cost is divided by the hourly wage ($17.02).

Annual Costs After First Year

Monitoring

26	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr), depending on the size of the POTW.
27	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 25) by the sample frequency (column 26) by the time (1 hour) required to sample.
28	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (9) regulated times the cost of the test ($18) times the number of POTWs (column 2) and the number of times each was sampled (column 26). The cost of the test was estimated for the Regulatory Impact Analyses (RIA) of the Proposed Regulation for Sewage Sludge Use and Disposal, EPA, 1988. It was determined by inquiries made to several testing laboratories resulting in an average cost of $18 per metal in a composted sludge.

Columns	Description
29	The actual dollar cost for testing the concentration of the regulated organic pollutants was determined same as the metals. The calculation was done by multiplying the cost ($823 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are composted) times the number of POTWs (column 2) and the number of times each was sampled (column 26).
Recordkeeping	
30	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for the calculation of the pollutant loading rate and time to file the information. The total number of hours is determined by multiplying the number of POTWs (column 25) times the frequency (column 26) times (.5) hours.
31	This column represents the number of distributors which will contract with a POTW to disburse the sludge. It was assumed that 10% of the POTWs will use a distributor.
32	The assumption was made that the distributors would enter into a contract for at least a year.
33	The time assumed for filing a contract and getting the required signatures was assumed to be approximately one hour. The calculation was done by multiplying number of distributors (column 31) requiring a contract by the time required for filing contract (1 hour).
34	The time assumed for filing a certification and getting the required signatures was assumed to be approximately one hour. The calculation

Columns	Description
	was done by multiplying number of distributors (column 31) requiring a certification by the time required to file (1 hour).
35	The expenses incurred for the second and third years is the sum of columns 28 and 29.
36	In addition to the expenses incurred (column 37) direct labor (sum of columns 28, 32, 35 and 36) for the POTW employees is also incurred.
37	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are $14.42 and $10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x $14.42) + ($10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision the Water Pollution Control Federation's Personnel Advancement Committee in October 1985. It published an annual salary of $16,400 for a laboratory technician. Dividing the annual salary by 2080 working hours in a year an hourly wage of $7.88 is calculated. Since the survey was performed in 1984 an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for inflation a hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a

Columns	Description
	technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was $17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.
38	To compute the total burden hours the total cost is divided by the hourly wage ($17.02).
39-50	These columns are a summation of the previous cost estimates. In the last row an average cost is calculated for all POTWs.

24-Oct 09:42 EXHIBIT 4 MONOFILL

ANNUAL COSTS FOR FIRST YEAR

		APPLICATION COSTS						MONITORING COSTS				RECORDKEEPING	TOTALS			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SIZE MGD	POTW'S	SAMPLE FREQ.	HRS TO SAMPLE @2x3xHRS	HRS FOR CERT. 2xHRS	METALS ($15*6) 2x3x$	ORGANICS 2x3x$	METHANE RUN-OFF (CONT)	SAMPLE & ACCT. FREQ.	HRS TO SAMPLE 2x9xHRS	METALS ($15*6) 2x9x$	ORGANICS 2x9x$	ACCT. HRS 2x9xHRS	EXPENSES INCURRED 6+7+ 11+12	DIRECT LABOR 4+5+ 10+13	TOTAL COST 14+15x$ 17.02	TOTAL HOURS 15+14/$ 17.02
			1	10	90	698			1	90	698	0.5				
			HRS	HRS	$	$			HRS	$	$	HRS	$	HRS	$	HRS
(0-1)	19	1	19	190	1710	13262	NO ADD.	0	0	0	0	0	14972	209	19000	1000
(1-10)	19	1	19	190	1710	13262	INCRE.	3	57	5130	39786	29	59888	295	65000	4000
(>10)	11	1	11	110	990	7678	COSTS	11	121	10890	84458	61	104016	303	109000	6000
TOTALS	49		49	490	4410	34202			178	16020	124244	90	178876	807	193000	11000

ANNUAL COSTS AFTER FIRST YEAR

		MONITORING COSTS				RECORDKEEPING	TOTALS			
18	19	20	21	22	23	24	25	26	27	28
SIZE MGD	POTW'S	SAMPLE FREQ. PER YR	HRS TO SAMPLE 19x20xHRS	METALS ($15*6) 19x20x$	ORGANICS 19x20x$	ACCT. HRS 19x20xHRS	EXPENSES INCURRED 22+23	DIRECT LABOR 21+24	TOTAL COST 25+26x$	TOTAL HOURS 26+25/$
			1	90	698	0.5				
			HRS	$	$	HRS	$	HRS	$	HRS
(0-1)	19	1	19	1710	13262	10	14972	29	15000	1000
(1-10)	19	4	76	6840	53048	38	59888	114	62000	4000
(>10)	11	12	132	11880	92136	66	104016	198	107000	6000
TOTALS	49		227	20430	158446	114	178876	341	184000	11000

TOTAL COST

APPLICATION	48000
MONITORING	509000
RECORDKEEPING	5000
TOTAL	562000

@ DIGITS IN THE EQUATIONS REFER TO COLUMN NUMBERS THE HRS, $, $, ETC. REFER TO VARIABLES USUALLY FOUND IN THE ROW FOLLOWING THE EQUATION.

TOTAL COSTS DISTRIBUTED BY POTW SIZE AND TYPE OF REQUIREMENT

			APPLICATION COSTS				MONITORING COSTS				RECORDKEEPING COSTS		
		29	30	31	32	33	34	35	36	37	38	39	40
			EXPENSES INCURRED 6+7	DIRECT LABOR 4+5	TOTAL COST 30+31x$	TOTAL HOURS 31+30/$	EXPENSES INCURRED	DIRECT LABOR	TOTAL COST 34+35/$	TOTAL HOURS 35+34/$	DIRECT LABOR HOURS	TOTAL COST 38x$	TOTAL/POTW (33+37+39)/2
			$	HRS	$	HRS	$	HRS	$	HRS	HRS	$	$
FIRST YEAR	(0-1)		14972	209	18529	1089	0	0	0	0	0	0	975
	(1-10)		14972	209	18529	1089	44916	57	45886	2696	29	494	3416
	(>10)		8668	121	10727	630	95348	121	97407	5723	61	1038	9925
SECOND YEAR	(0-1)						14972	19	15295	899	10	170	814
	(1-10)						59888	76	61182	3595	38	647	3254
	(>10)						104016	132	106263	6243	66	1123	9762
THIRD YEAR	(0-1)						14972	19	15295	899	10	170	814
	(1-10)						59888	76	61182	3595	38	647	3254
	(>10)						104016	132	106263	6243	66	1123	9762
THREE YEAR TOTAL PER POTW SIZE	(0-1)		14972	209	18529	1089	29944	38	30590	1798	20	340	2600
	(1-10)		14972	209	18529	1089	164692	209	168250	9886	105	1788	9900
	(>10)		8668	121	10727	630	303380	385	309933	18209	193	3284	29400
THREE YEAR TOTAL	--		39000	1000	48000	3000	498000	1000	509000	30000	318	5000	
COST PER POTW FOR THREE YEARS	(0-1)				975				1610			18	TOTALS 2600
	(1-10)				975				8855			94	9900
	(>10)				975				28176			299	29500
AVERAGE					980				10388			102	11500

Exhibit 4. Monofill

Columns	Description
1,18,29	Breakdown of wastewater treatment capacity in million gallons per day of design capacity. these are the same intervals used for monitoring and reporting frequency requirements.
Annual Costs for First Year	
Application	
2,19	Number of facilities in each class category. Source of information is from the Needs Survey, Summaries of Technical Data, (EPA, 1984).
3	Frequency of sampling for the permit application procedure is just once regardless of the POTW capacity. So the frequency of sampling for application purposes is 1 for the effective time of the ICR report..
4	This is the total number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. the calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 3) by the time (1 hour) required to sample.
5	The time assumed for filing certification of all the parameters required was 10 hours. Monofills have more parameters to certify than land application, so the time allotted was considerably increased. The calculation consisted of multiplying number of POTWs (column 2) by the time (10 hours) allotted for the activity.

Columns	Description
6	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (7) regulated times the cost of the test ($15) times the number of POTWs (column 2) and the number of times each was sampled (column 3). The cost of the test was estimated for the Regulatory Impact Analysis (RIA) of the Proposed Regulation for Sewage Sludge Use and Disposal, EPA, 1988. It was determined by inquiries made to several testing laboratories resulting in an average cost of $15.
7	The actual dollar cost for testing the concentration of the regulated organic pollutants was determined same as the metals. The calculation was done by multiplying the cost ($698 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are not composted) times the number of POTWs (column 2) and the number of times each was sampled (column 3).
8	Monofills are required to constantly monitor for methane gas. However, this requirement is similar to existing regulations (40 CFR Part 257). Therefore, no incremental costs are incurred for this requirement.
Monitoring	
9	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr) depending on the size of the POTW. The first year the sewage sludge must be tested initially for the permit so the subsequent sampling for that year would be one less than what

Columns	Description
	would be expected annually (11/yr, 3/yr, 0/yr, respectively.
10	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 9) by the time (1 hour) required to sample.
11	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (7) regulated times the cost of the test ($15) times the number of POTWs (column 2) and the number of times each was sampled (column 9). The cost of the test was estimated for the RIA by inquiries made to several testing laboratories resulting in an average cost of $15.
12	These expenses are incurred by sending sewage samples to a commercial laboratory for analysis of the concentration of the organic pollutants. The calculation was done by multiplying the cost ($698 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are not composted) times the number of POTWs (column 2) and the number of times each was sampled (column 9).

Columns	Description
Recordkeeping	
13	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for the calculation of the pollutant loading rate and time to file the information. The total number of hours is determined by multiplying the number of POTWs (column 2) times the frequency (column 9) times (.5) hours.
14	The expenses incurred for the first year is the sum of columns 6, 7, 11 and 12.
15	In addition to the expenses incurred (column 15) direct labor (sum of columns 4, 5, 10 and 13) for the POTW employees is also incurred.
16	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are $14.42 and $10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x $14.42) + ($10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision the Water Pollution Control Federation's Personnel Advancement Committee in October 1985.

Columns	Description
	It published an annual salary of 16,400 for a laboratory technician. Dividing the annual salary by 2080 working hours in a year an hourly wage of $7.88 is calculated. Since the survey was performed in 1984 an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for inflation a hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was $17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.
17	To compute the total burden hours, the total cost is divided by the hourly wage ($17.02).
Annual Costs After First Year	
Monitoring	
20	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr), depending on the size of the POTW.
21	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container, go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 19) by the sample frequency (column 20) by the time (1 hour) required to sample.
22	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include

Columns	Description
	only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (7) regulated times the cost of the test ($15) times the number of POTWs (column 19) and the number of times each was sampled (column 20). The cost of the test was estimated for the RIA by inquiries made to several testing laboratories resulting in an average cost of $15.
23	Expenses incurred by sending sewage samples to a commercial laboratory for analysis of the concentration of the organic pollutants. The calculation was done by multiplying the cost ($698 cost for the entire set of organic chemicals covered by the proposed regulation for sludges that are not composted) times the number of POTWs (column 19) and the number of times each was sampled (column 20).
Recordkeeping	
24	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for calculating of the pollutant loading rate and filing the information. The total number of hours is determined by multiplying the number of POTWs (column 19) times the frequency (column 20) times (.5) hours.
25	The expenses incurred for the second and third year is the sum of columns 22 and 23.

Columns	Description
26	In addition to the expenses incurred (column 27) direct labor (sum of columns 21 and 24) for the POTW employees is also incurred.
27	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are $14.42 and $10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x $14.42) + ($10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision the Water Pollution Control Federation's Personnel Advancement Committee in October 1985. It published an annual salary of $16,400 for a laboratory technician. Dividing the annual salary by 2080 working hours in a year an hourly wage of $7.88 is calculated. Since the survey was performed in 1984 an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for inflation a hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was $17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.

Columns	Description
28	To compute the total burden hours, the total cost is divided by the hourly wage ($17.02).
29-40	These columns are a summation of the previous cost estimates. In the last row an average cost is calculated for all POTWs.

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EXHIBIT 5 INCINERATION

ANNUAL COST FOR FIRST YEAR

		APPLICATION COSTS					MONITORING COSTS				RECORDKEEPING	TOTALS			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SIZE MGD	POTW'S	SAMPLE FREQ.	HRS TO SAMPLE @2x3xHRS 1	DISP. 0.72 2x%x$ 1000	PERF. 0.72 2x%x$ 11831	METALS ($15*7) 2x3x$ 105	SAMPLE & ACCT. FREQ.	HRS TO SAMPLE 2x8xHRS 1	METALS ($15*7) 2x8x$ 105	OPERATING PARA. 2x$ 22780	ACCT. HRS 2x8xHRS 0.5	EXPENSES INCURRED 5+6+7+ 10+11	DIRECT LABOR 4+9+12	TOTAL COST 13+14x$ 17.02	TOTAL HOURS 14+13/$ 17.02
			HRS	$	$	$		HRS	$	$	HRS	$	HRS	$	HRS
(0-1)	3	1	3	2160	25555	315	0	0	0	68340	0	96370	3	96000	6000
(1-10)	71	1	71	51120	604801	7455	3	213	22365	1617380	107	2303121	391	2310000	136000
(>10)	95	1	95	68400	809240	9975	11	1045	109725	2164100	523	3161440	1663	3190000	187000
TOTALS	169		169	121680	1439596	17745		1258	132090	3849820	630	5580931	2057	5598000	329000

ANNUAL COSTS AFTER FIRST YEAR

		MONITORING COSTS					TOTALS			
17	18	19	20	21	22	23	24	25	26	27
SIZE MGD	POTW'S	SAMPLE FREQ.	HRS TO SAMPLE 18x19xHRS 1	METALS ($15*7) 18x19x$ 105	OPERATING PARA. 18x$ 22780	ACCT. HRS 18x19xHRS 0.5	EXPENSES INCURRED 21+22	DIRECT LABOR 20+23	TOTAL COST 24+25x$ 17.02	TOTAL HOURS 25+24/$
			HRS	$	$	HRS	$	HRS	$	HRS
(0-1)	3	1	3	315	68340	2	68655	5	69000	4000
(1-10)	71	4	284	29820	1617380	142	1647200	426	1654000	97000
(>10)	95	12	1140	119700	2164100	570	2283800	1710	2313000	136000
TOTALS	169		1427	149835	3849820	714	3999655	2141	4036000	237000

TOTAL COST

APPLICATION	1582000
MONITORING	12051000
RECORDKEEPING	35000
TOTAL	13668000

@ DIGITS IN THE EQUATIONS REFER TO COLUMN NUMBERS THE HRS, $, %, ETC. REFER TO VARIABLES USUALLY FOUND IN THE ROW FOLLOWING THE EQUATION.

TOTAL COSTS DISTRIBUTED BY POTW SIZE AND TYPE OF REQUIREMENT

		APPLICATION COSTS				MONITORING COSTS				RECORDKEEPING COSTS		
	28	29	30	31	32	33	34	35	36	37	38	39
	POTW SIZE	EXPENSES INCURRED 5+6+7	DIRECT LABOR 4	TOTAL COST 29+30x$	TOTAL HOURS 30+29/$	EXPENSES INCURRED	DIRECT LABOR	TOTAL COST 33+34x$	TOTAL HOURS 34+33/$	DIRECT LABOR	TOTAL COST 37x$	TOTAL/POTW
		$	HRS	$	HRS	$	HRS	$	HRS	HRS	$	$
FIRST YEAR	(0-1)	28030	3	28081	1650	68340	0	68340	4015	0	0	32140
	(1-10)	663376	71	664584	39047	1639745	213	1643370	96555	107	1821	32532
	(>10)	887615	95	889232	52246	2273825	1045	2291611	134642	523	8901	33576
SECOND YEAR	(0-1)					68655	3	68706	4037	2	34	22913
	(1-10)					1647200	284	1652034	97064	142	2417	23302
	(>10)					2283800	1140	2303203	135323	570	9701	24346
THIRD YEAR	(0-1)					68655	3	68706	4037	2	34	22913
	(1-10)					1647200	284	1652034	97064	142	2417	23302
	(>10)					2283800	1140	2303203	135323	570	9701	24346
THREE YEAR TOTAL PER POTW SIZE	(0-1)	28030	3	28081	1650	205650	6	205752	12089	4	68	78000
	(1-10)	663376	71	664584	39047	4934145	781	4947438	290683	391	6655	79100
	(>10)	887615	95	889232	52246	6841425	3325	6898017	405288	1663	28303	82300
THREE YEAR TOTAL		1579000	169	1582000	93000	11981000	4000	12051000	708000	2000	35000	
COST PER POTW FOR THREE YEARS	(0-1)			9360				68584			23	78000
	(1-10)			9360				69682			94	79100
	(>10)			9360				72611			298	82300
AVERAGE				9361				71308			207	80900

Exhibit 5. Incineration

Columns	Description
1,17,28	Breakdown of wastewater treatment capacity in million gallons per day of design capacity. these are the same intervals used for monitoring and reporting frequency requirements.
Annual Costs for First Year	
Application	
2,18	Number of facilities in each class category. Source of information is from the Needs Survey, Summaries of Technical Data, (EPA, 1984).
3	Frequency of sampling for the permit application procedure is just once regardless of the POTW capacity. So the frequency of sampling for application purposes is 1 for the effective time of the ICR report.
4	This is the total number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. the calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 3) by the time (1 hour) required to sample.
5	If the incinerator does not meet the required concentrations by using the equation and parameters in the regulation the owner/operator has the option of doing a case-by-case dispersion modeling. This would entail taking actual measurements of the incinerator operations such as stack height, temperature, gas velocity, etc. A composter model can then be run to calculate a dispersion factor. Dispersion modeling for each facility

Columns	Description
	would be conducted by an air modeling consultant at a cost of $1,008, which accounts for 16 hours of work at $63 per hour. In addition, costs associated with supervision of the parameter measurements, data assembly and report writing are based on 24 hours of the assistant superintendent's time and 8 hours of clerical staff time. Hourly labor rates are $14.46 for the assistant superintendent and $10.49 for clerical staff. The total cost per POTW will be $1,008. In the RIA it was determined that 122 of the 169 POTWs fail, so 72% of the POTWs will be taking this extra step. The actual value was determined by taking 72% of the POTWs (column 2) times the dispersion modeling cost ($1,000).
6	If the POTWs still don't comply by using their own calculated dispersion factor, they can comply by doing their own emission testing. Only metals are assumed to be tested, since total hydrocarbon limits are not based on control efficiencies, only on gas flow rates and dispersion factors. Most of the cost of emissions testing is associated with stack sampling. The cost is approximately the same whether one or seven metals are analyzed. One incinerator test for metals (including costs for sampling, analysis, and report preparation) averages about $11,400 based on discussions with companies providing this service. An additional $431 was assumed for compiling the data thus the total cost is $11,831. The assumption was made that 72% of all POTWs would do the emissions testing in order to meet the regulation requirements. So the number of POTWs (column 2) was multiplied by 72% and the emissions testing costs per unit ($11,831). Both the dispersion and emissions expense is only accounted for once when the permit application is submitted.

Columns	Description
7	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (7) regulated times the cost of the test ($15) times the number of POTWs (column 2) and the number of times each was sampled (column 3). The cost of the test was estimated for the Regulatory Impact Analysis (RIA) of the Proposed Regulation for Sewage Sludge Use and Disposal, EPA, 1988. It was determined by inquiries made to several testing laboratories resulting in an average cost of $15.
Monitoring	
8	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr) depending on the size of the POTW. The first year the sewage sludge must be tested initially for the permit so the subsequent sampling for that year would be one less than what would be expected annually (11/yr, 3/yr, 0/yr, respectively.
9	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container to go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 2) by the sample frequency (column 8) by the time (1 hour) required to sample.
10	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline

Columns	Description
	costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (7) regulated times the cost of the test ($15) times the number of POTWs (column 2) and the number of times each was sampled (column 8). The cost of the test was estimated for the RIA by inquiries made to several testing laboratories resulting in an average cost of $15. The values for these columns are actual dollar costs. It is assumed the sewage samples are sent for analysis to a commercial laboratory.
11	The proposed regulations specify continuous monitoring and recording of several operating parameters. The NSPS regulations (New Source Performance Standards as required by the Clean Air Act) for sewage sludge incinerators require the same monitoring and recording. The baseline for determining current compliance with these requirements includes the incinerators covered by NSPS. The following assumptions regarding baseline monitoring and testing were based on expert opinion and EPA data on equipment costs: ° Continuous monitoring and recording of sludge feed rate to the incinerator. All plants are assumed to have sludge feed rate monitors. Those plants covered by NSPS must continuously monitor and record feed rates. A few plants not covered by NSPS may not have continuous recorders and may have to add this equipment at a cost of approximately $837 per unit. Thirty percent of all POTWs are covered by NSPS, thus

Columns	Description
	70% are expected to add feed rate recorders at a total cost of about $160,000.
	° Continuous monitoring and recording of furnace temperature. Seventy percent of incinerators are assumed to have these devices already. For those which do not, two thermocouples for each of eight hearths for multiple-hearth furnaces, and two thermocouples each for the drying, combustion, and cooling zones for other types of incinerators were combustion, and cooling zones for other types of incinerators were assumed. A total of 240 out of 282 incineration units are multiple-hearth furnaces. The annual costs per unit for these devices are $1,642 for multiple-hearth units and $1,447 for other incinerators. For the units out of compliance, costs of adding furnace temperature monitors are approximately $140,000.
	° Continuous monitoring and recording of the scrubber pressure drop. Thirty percent of the units are assumed to have pressure monitors and recording devices. For those which do not, the annual costs per unit are $1,090 for the monitor and $837 for the recorder, including paper. For the units out of compliance, costs of adding pressure drop monitors are approximately $380,000.
	° Continuous monitoring and recording of the temperature of combustion gases exiting the unit. To meet this requirement, two thermocouples per unit were assumed. The cost of the sensing and recording devices (including maintenance) is $1,370 annually. Thirty percent of the units are assumed to have such devices already. For the units out

Columns	Description
	of compliance, costs of adding combustion gas temperature monitors are approximately $270,000. ° Oxygen monitors. Thirty percent of the units are assumed to have these devices. The annual cost of the monitor (including maintenance) is $6,294. For the units out of compliance, costs of adding oxygen monitors are approximately $1.24 million. ° Continuous monitoring and recording of total hydrocarbon concentrations in the incinerator stack. None of the units are assumed to have these devices. The annual cost of the monitor (including maintenance is $6,000 per unit. Costs of adding total hydrocarbon monitors are approximately $1.7 million. The total incremental costs of monitoring and recording for all POTWs with incinerators are estimated to be the total of the above seven items ($3,897,000). The total cost was then distributed equally among the 169 POTWs ($22,780). Because the incinerators are not equally distributed among the POTWs this might be an overestimate for the smaller POTWs and an underestimate for the larger POTWs. However, when the total costs are calculated the over and under estimates will balance out. As stated previously, these costs are estimated on an annual basis. To calculate the total cost the number of POTWs (column 2) is multiplied times the cost for monitoring the operating parameters ($22,780).
Recordkeeping	
12	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as

Columns	Description
	frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for calculating the pollutant loading rate and filing the information. The total number of hours is determined by multiplying the number of POTWs (column 2) times the frequency (column 8) times (.5) hours.
13	The expenses incurred for the first year is the sum of columns 5, 6, 7, 10 and 11.
14	In addition to the expenses incurred (column 13) an hourly burden (sum of columns 4, 9 and 12) for the POTW employees is also incurred.
15	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are $14.42 and $10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x $14.42) + ($10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision the Water Pollution Control Federation's Personnel Advancement Committee in October 1985. It published an annual salary of $16,400 for a laboratory technician. Dividing the annual salary by 2080 working hours in a year an hourly wage of $7.88 is

Columns	Description
	calculated. Since the survey was performed in 1984 an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for inflation a hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was $17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.
16	To calculate the total burden hours, the total cost is divided by the hourly wage.

Annual Costs After First Year

Monitoring

19	Frequency of sampling is regulated as monthly (12/yr), quarterly (4/yr) or annually (1/yr), depending on the size of the POTW.
20	This is the number of hours spent by all the facilities to collect a representative sample for analysis. It was assumed that it took a laboratory technician 1 hour to prepare and label a container, go to the site of collection, collect the sample and submit sample for analysis. The calculation was done by multiplying number of facilities (column 18) by the sample frequency (column 19) by the time (1 hour) required to sample.
21	It is assumed that all costs of sludge testing for metals are incremental to baseline costs. The actual baseline costs for testing in most States include only metals at a low frequency. So the assumption overstates the incremental

Columns	Description
	cost but the overestimation is not believed to be significant. The actual calculation was done by multiplying the number of metals (7) regulated times the cost of the test ($15) times the number of POTWs (column 18) and the number of times each was sampled (column 19). The cost of the test was estimated for the RIA by inquiries made to several testing laboratories resulting in an average cost of $15.
22	Basic operating parameters are required to be monitored. The cost estimates for the monitoring is explained in detail in column 11. The cost per POTW is estimated at $22,780.
Recordkeeping	
23	Once the test results are available, a simple calculation has to be performed to keep track of the pollutants loading rates. This activity is performed as frequently as the pollutant concentration in sewage sludge is tested. It is assumed that it takes at least half an hour for the calculating of the pollutant loading rate and filing the information. The total number of hours is determined by multiplying the number of POTWs (column 18) times the frequency (column 19) times (.5) hours.
24	The expenses incurred for the second and third years is the sum of columns 21 and 22.
25	In addition to the dollars spent (column 26) an hourly burden (columns 21 and 25) for the POTW employees is also incurred.
26	To compute the total cost the expenses incurred must be added to the cost of direct labor. The direct labor can be attributed to either a laboratory technician, assistant superintendent or

Cost	Description
	clerical staff. As previously noted the time attributed to implementing a contract and certification program can be attributed to a 4:1 ratio of an assistant superintendent's time to clerical staff. Hourly labor rates are $14.42 and $10.49 respectively according to the Regulatory Impact Analysis. The weighted cost per hour would be (4 x $14.42) + ($10.49)/5 = $13.63/hour. As mentioned previously, the hourly burden can also be attributed to a laboratory technician. An hourly wage of $17.02 for a laboratory technician was determined from the Salary Survey performed under the supervision the Water Pollution Control Federation's Personnel Advancement Committee in October 1985. It published an annual salary of $16,400 for a laboratory technician. Dividing the annual salary by 2080 working hours in a year an hourly wage of $7.88 is calculated. Since the survey was performed in 1984 an inflation factor of (1.08) is used to update the amount to equivalent 1987 dollars (Economic Report of the President, 1988). Thus accounting for inflation a hourly wage of $8.51 is computed. Assuming 100% overhead the actual cost for a technician including labor and overhead is $17.02. For simplification of the calculation, the hourly wage used was $17.02. It is a slight overestimate but not of significance. The cost of direct labor was added to the expenses for the total cost to the POTWs.
27	To calculate the total burden hours, the total cost is divided by the hourly wage.
28-39	These columns are a summation of the previous cost estimates. In the last row an average cost is calculated for all POTWs.

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EXHIBIT 6 SURFACE DISPOSAL SITES

ANNUAL COSTS FOR FIRST YEAR

	APPLICATION COSTS						MONITORING COSTS				RECORDKEEPING	TOTALS			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SURFACE DISPOSAL SITES	SAMPLE FREQ.	HRS TO SAMPLE @1x2xHRS 1	HRS FOR CERT. 1xHRS 10	METALS ($15*6) 1x2x$ 90	ORGANICS 1x2x$ 698	METHANE RUN-OFF (CONT)	SAMPLE & ACCT. FREQ.	HRS TO SAMPLE 1x8xHRS 1	METALS ($15*6) 1x8x$ 90	ORGANICS 1x8x$ 698	ACCT. HRS 1x8xHRS 0.5	EXPENSES INCURRED 5+6+ 10+11	DIRECT LABOR 3+4+ 9+12	TOTAL COST 13+14x$ 17.02	TOTAL HOURS 14+13/$ 17.02
2395	1	HRS 2395	HRS 23950	$ 215550	$ 1671710	NO ADD. COSTS	0	HRS 0	$ 0	$ 0	HRS 0	$ 1887260	HRS 26345	$ 2336000	HRS 137000

ANNUAL COSTS AFTER FIRST YEAR

	MONITORING COSTS				RECORDKEEPING	TOTALS			
17	18	19	20	21	22	23	24	25	26
SURFACE DISPOSAL SITES	SAMPLE FREQ. PER YR	HRS TO SAMPLE 17x18xHRS 1	METALS ($15*6) 17x18x$ 90	ORGANICS 17x18x$ 698	ACCT. HRS 17x18xHRS 0.5	EXPENSES INCURRED 20+21	DIRECT LABOR 19+22	TOTAL COST 23+24x$	TOTAL HOURS 24+23/$
2395	1	HRS 2395	$ 215550	$ 1671710	HRS 1198	$ 1887260	HRS 3593	$ 1948000	HRS 114000

TOTAL COST

APPLICATION	2336000
MONITORING	3856000
RECORDKEEPING	41000
TOTAL	6233000

@ DIGITS IN THE EQUATIONS REFER TO COLUMN NUMBERS THE HRS, $, $, ETC. REFER TO VARIABLES USUALLY FOUND IN THE ROW FOLLOWING THE EQUATION.

TOTAL COSTS DISTRIBUTED BY POTW SIZE AND TYPE OF REQUIREMENT

	APPLICATION COSTS				MONITORING COSTS				RECORDKEEPING COSTS		
27	28	29	30	31	32	33	34	35	36	37	38
	EXPENSES INCURRED 5+6	DIRECT LABOR 3+4	TOTAL COST 28+29x$	TOTAL HOURS 29+28/$	EXPENSES INCURRED	DIRECT LABOR	TOTAL COST 32+33/$	TOTAL HOURS 33+32/$	DIRECT LABOR HOURS	TOTAL COST 36x$	TOTAL/POTW (30+34+37)/2
	$	HRS	$	HRS	$	HRS	$	HRS	HRS	$	$
FIRST YEAR	1887260	26345	2335652	137230	0	0	0	0	0	0	975
SECOND YEAR					1887260	2395	1928023	113280	1198	20390	814
THIRD YEAR					1887260	2395	1928023	113280	1198	20390	814
THREE YEAR TOTAL	1887260	26345	2336000	137000	3774520	4790	3856000	227000	2396	41000	
AVERAGE			975				1610			17	2600

Exhibit 6. Surface Disposal Sites

Columns	Description
1	The number of surface disposal sites was calculated in the RIA by using the 1986 Needs Survey data. EPA used certain information on sludge handling processes to determine that about 42% of the 5,669 POTWs using "other" (not defined) disposal methods used surface impoundments for disposal (2395 POTWs).
2	The surface disposal sites were considered to be in the <1 mgd category and are only required to be tested once a year.
3-39	The calculations to determine the estimate costs for the information collection request on surface impoundments are the same as monofills. The explanation on the calculations for monofills are found in Exhibit 4.

13. ESTIMATION OF RESPONDENT BURDEN

The incremental burden attributed to POTWs responding to the proposed technical regulations is 2,281,000 hours, as summarized in Table 8. Burden for each type of requirement per end use is shown in detail in Exhibits 2 through 8.

14. REASONS FOR CHANGE IN BURDEN

This is a new regulatory program under the statute of CWA 405(d), therefore, this item is not applicable.

15. SCHEDULING

EPA's current schedule for the sewage sludge technical regulations include the following milestones leading to proposal and to promulgation of the first round regulation.

Rulemaking Package (Preamble, Regulation, etc.) Drafted	9/16/88
Steering Committee/Work Group Closure	11/4/88
Complete Office of Water Review	12/23/88
Initiate Red Border Review	1/6/89
Complete Red Border Review	1/27/89
Initiate OMB Review	2/6/89
Complete OMB Review	2/21/89
Fed. Reg. Notice Signed by Assistant Administrator for Water	3/24/89
Fed. Reg. Notice Signed by Administrator	4/7/89
Fed. Reg. Publication	4/28/89
Public Comment Period Ends	7/28/89
Receive National Sewage Sludge Survey Report and Contractor's Data Base	10/2/89
Renotice Regulation Based on New Data	7/15/90
Public Comment Period Ends	9/15/90
Rulemaking Package Revised in Response to public comment	12/1/90
Steering Committee/Work Group Closure	3/1/91
Complete Office of Water Review	5/1/91
Initiate Red Border Review	5/15/91
Complete Red Border Review	6/8/91
Initiate OMB Review	6/22/91
Complete OMB Review	7/7/91
Fed. Reg. Notice Signed By Assistant Administrator for Water	8/22/91
Fed. Reg. Notice Signed By Administrator	9/22/91
Fed. Reg. Publication	10/8/91

Once the regulation is promulgated the POTWs must come under compliance as expeditiously as practicable but in no case later than 12 months after their publication or by September 15, 1992.

16. STANDARD INDUSTRIAL CLASSIFICATIONS (SIC)

The SIC 4952 was used to determine the subsection of major privately owned treatment works (PrOTWs).

EXHIBIT 7 SUMMARY OF COSTS AND BURDEN HOURS

	LAND APPLICATION		DISTRIBUTION & MARKETING		MONOFILL		INCINERATION		SURFACE DISPOSAL		TOTALS	
	$	HOURS	$	HOURS	$	HOURS	$	HOURS	$	HOURS	$	HOURS
YEAR 1	6189000	364000	611000	36000	193000	11000	5596000	329000	2336000	137000	14925000	877000
YEAR 2	5186000	306000	567000	34000	184000	11000	4036000	237000	1948000	114000	11921000	702000
YEAR 3	5186000	306000	567000	34000	184000	11000	4036000	237000	1948000	114000	11921000	702000
3 YR TOT	16561000	976000	1745000	104000	561000	33000	13668000	803000	6232000	365000	38767000	2281000
POTW'S OR PrOTW	3023		106		49		169		2395			
AVERAGE	5500	323	16500	981	11400	673	80900	4751	2600	152		
$ RANGE FOR 3 YRS	(3000-34000)		(3400-37000)		(2600-29500)		(19000-85900)		(2600)			

THE AMOUNT WHICH WILL BE PAID BY THE POTW WILL FALL WITHIN THE RANGE GIVEN, WHERE IT FALLS IN THE RANGE WILL DEPEND ON THE SIZE OF THE POTW AND/OR THE MODIFICATIONS NEEDED TO COME UNDER COMPLIANCE.

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EXHIBIT 8

SUMMARY OF BURDENS AND COSTS
TECHNICAL REGULATIONS

REQUIREMENT	LAND APP. $	D & M $	MONOFILL $	INCIN. $	SUR. DIS. $	TOTAL COST $
APPLICATION	3644000	151000	48000	1582000	2336000	7761000
MONITORING	12275000	1577000	509000	12051000	3856000	30268000
RECORDKEEPING	641000	15000	5000	35000	41000	737000
TOTAL	16560000	1743000	562000	13668000	6233000	38766000

	HRS	COSTS $
COSTS TO RESPONDENTS	2278000	38766000

Appendix A

Subpart I - Monitoring, Record Keeping, and Reports

§503.80 Purpose.

This subpart contains the minimum frequencies that owners or operators of treatment works must monitor their sewage sludge; the minimum records that owners or operators of treatment works must keep and the period of time the records must be kept; and the minimum information that owners or operators of treatment works must report to the Permitting Authority. Nothing in this subpart prevents the establishment of more stringent monitoring, record keeping, and report requirements for any practice covered by this part.

§503.81 General.

Owners or operators of treatment works, or distributors of sewage sludge shall collect sewage sludge samples and analyze these samples in accordance with the procedures, methods, and frequency specified in (a) (b) and (c) of this section. The pollutants and pathogenic organisms or indicator organisms for which owners or operators of treatment shall analyze their sewage sludge depend on the use or disposal method employed by the treatment work or

distributor and are specified in §503.93 - §503.97 of this Part.

(a) Sampling protocol.

"Sampling Procedures and Protocols for the National Sewage Sludge Survey," Office of Water Regulations and Standards (March, 1988).

(b) Analytical methods.

(1) Organic pollutants.

Methods 1624 and 1625 in "Analytical Methods for the National Sewage Sludge Survey," Office of Water Sample Control Center (March, 1988) or Methods 624 and 625 in 40 CFR Part 136.

(2) Inorganic pollutants.

"Analytical Methods for the National Sewage Sludge Survey," Office of Water Sample Control Center (March, 1988).

(3) Pathogenic bacteria, Salmonella sp.

(i) Part 912 C.1, "Standard Methods for the Examination of Water and Wastewater," 16th Edition (1985); or

(ii) Kenner, B.A. and H.A. Clark, "Detection and enumeration of Salmonella and Pseudomonas aeruginosa," "J. Water Pollution Control Federation," 46(9):2163-2171.

(4) Animal viruses.

The density of animal viruses in sewage sludge shall be determined in accordance with "The Manual of Methods for Virology," EPA/600/4-84/013 (February, 1984), as revised.

(5) Protozoa.

(i) Part 917, "Standard Methods for the Examination of Water and Wastewater," 16th Edition (1985); or

(ii) Fox, J.C., P.R. Fitzgerald, and C. Lue-Hing, "Sewage Organisms: A Color Atlas," Lewis Publishers, Chelsea, Michigan (1981).

(6) Helminth ova.

(i) Part 917, "Standard Methods for the Examination of Water and Wastewater," 16th edition (1985); or

(ii) Fox, J.C., P.R. Fitzgerald, and C. Lue-Hing, "Sewage Organisms: A Color Atlas," Lewis Publishers, Chelsea Michigan (1981).

(7) Fecal coliform.

Part 908 or Part 909, "Standard Methods for the Examination of Water and Wastewater," 16th Edition (1985).

(8) Fecal streptococci/enterococci.

(i) Part 910 A, "Standard Methods for the Examination of Water and Wastewater," 16th Edition (1985); or

(ii) Slantetz, L.W. and C.H. Bartley, "Numbers of enterococci in water, sewage, and feces determined by the

membrane filter technique with an improved medium," "J. Bacteriology," 74:591-595 (1957).

(9) Volatile solids.

Part 209 C, "Standard Methods for the Examination of Water and Wastewater," 16th Edition (1985).

(10) Volatile suspended solids.

Part 209 G, "Standard Methods for the Examination of Water and Wastewater," 16th Edition (1985).

(11) Percent volatile solids reduction.

The percent volatile solids reduction shall be calculated using the following equation:

$$\text{Percent Volatile Solids Reduction} = \frac{(Mi-Mg) \times 100}{Mi}$$

Where:

Mi = The mass of volatile solids in sewage sludge prior to processing.

Mg = The mass of volatile solids in sewage sludge after processing.

(12) Specific oxygen uptake rate (SOUR).

Part 213 A, "Standard Methods for the Examination of Water and Waste Water," 16th Edition (1985).

(c) Frequency of monitoring and reporting.

Unless otherwise specified, owners or operators of treatment works shall monitor and report the parameters specified in this subpart in accordance with the following:

Treatment Works Design Capacity (million gallons per day)	Frequency of Monitoring
less than 1.0	once per year
1.0 to 10.0	once per quarter
greater than 10.0	once per month

§503.82 Land application of sewage sludge.

(a) Monitoring.

(1) Agricultural land.

Owners or operators of treatment works or distributors of sewage sludge shall monitor sewage sludge applied to agricultural land to:

(i) determine the concentrations of nitrogen and the pollutants listed on Tables 1 and 2 in §503.13. Owners or operators shall also monitor for the pollutants listed on Table 13 in §503.72, if the POTW grants removal credits for these pollutants.

(ii) Determine compliance with Class A, Class B, or Class C pathogen reduction requirements in §503.52.

(iii) Determine compliance with the vector attraction reduction requirements in §503.53.

(iv) When owners or operators of treatment works inject the sewage sludge below the surface of agricultural land to reduce the vector attraction, the sewage sludge does not have to be monitored for volatile solids, SOUR, pH, or moisture content.

(2) Non-agricultural land.

Owners or operators of treatment works shall monitor the sewage sludge applied to non-agricultural land to:

(i) Determine the concentration of nitrogen and the pollutants listed on Table 3 in §503.15. Owners or operators shall also monitor for the pollutants listed on Table 13 in §503.72 if the POTW grants removal credits for these pollutants.

(ii) Determine compliance with Class A, Class B, or Class C pathogen reduction requirements.

(iii) Determine compliance with the vector attraction reduction requirements in §503.53.

(iv) When owners or operators of treatment works sub-surface inject the sewage sludge below the surface of non-agricultural land to reduce the vector attraction, the sewage sludge does not have to be monitored for volatile solids, SOUR, pH, or moisture content.

(b) Record keeping.

(1) Agricultural land.

Owners or operators of treatment works shall or distributors of sewage sludge shall retain for the life of the treatment works the following information:

(i) The name and address of the applier of the sewage sludge;

(ii) The location and legal description of the field, including the area of each field where the sewage sludge is applied;

(iii) The concentration of nitrogen and the pollutants listed on Tables 1 and 2 in §53.13;

(iv) The amount of sewage sludge applied to each site;

(v) The amount of each organic pollutant listed on Table 1 in §503.13 applied to each site;

(vi) The amount of each inorganic pollutant listed on Table 2 in §503.13 applied to each site;

(vii) The results of the monitoring of the sewage sludge to determine compliance with the pathogen reduction requirements in §503.52;

(viii) The results of the monitoring of the sewage sludge to determine compliance with the vector attraction reduction requirements in §503.53;

(ix) A record that indicates whether sewage sludge was injected below the soil surface to comply with the vector attraction reduction requirement in §503.53(f);

(x) The contract(s) between the treatment work and the distributors or appliers of the sewage sludge;

(xi) Certification that the applier was informed about the access and use restrictions; and

(xii) Certification, for each application site, that the distance between the sewage sludge boundary and any surface water is at least 10 meters.

(2) Non-agricultural land.

Owners or operators of treatment works or distributors of sewage sludge shall keep, for five years, the following information:

(i) The name and address of the applier of the sewage sludge;

(ii) The concentration of nitrogen and the pollutants listed on Table 3 in §503.15.

(iii) The results of the monitoring of the sewage sludge to determine compliance with the pathogen reduction requirements in §503.52;

(iv) The results of the monitoring of the sewage sludge to determine compliance with the vector attraction reduction requirements §503.53;

(v) A record that indicates whether sewage sludge was injected below the soil surface to comply with the vector attraction reduction requirement §503.53(f);

(vi) The contract(s) between the treatment works and the distributors or appliers of the sewage sludge;

(vii) Certification that the applier was informed about the access and use restrictions; and

(viii) Certification, for each application site, that the distance between the sewage sludge boundary and any surface water is at least 10 meters.

(c) Reports.

(1) Agricultural land.

Owners or operators of treatment works or distributors of sewage sludge shall provide the Permitting Authority with:

(i) The information required by §503.82(b)(1);

(ii) The contract(s) between the treatment work and the distributors or appliers of the sewage sludge;

(iii) The certification on the access and use restrictions for a Class B or Class C sewage sludge; and

(iv) The certification on the distance between the sewage sludge boundary and any surface water.

(v) After the initial submission, the owners or operators of a treatment work or distributors of sewage

sludge shall re-submit the information in (i)-(iv) only when there are changes.

(2) Non-agricultural land.

Owners or operators of treatment works or distributors of sewage sludge shall provide the Permitting Authority with the following information:

(i) The information required by §503.82(b)(2);

(ii) The contract(s) between the treatment works and the distributors or appliers of the sewage sludge;

(iii) The certification on the access and use restrictions for a Class B or Class C sewage sludge; and

(iv) The certification on the distance between the sewage sludge boundary and any surface water.

(v) After the initial submission the owners or operators of a treatment work or distributors of sewage sludge shall re-submit the information in (i)-(iv) only when there are changes.

§503.83 Distribution and marketing of sewage sludge.

(a) Monitoring.

(1) Owners or operators of treatment works shall monitor the sewage sludge that is distributed and marketed prior to disbursion to determine the concentration of nitrogen, the pollutants listed on Table 4 in §503.23.

Owners or operators shall also monitor for the pollutants listed on Table 13 in §503.72 if the POTW grants removal credits for these pollutants.

(2) When a treatment work is not the distributor, the distributor of the product shall monitor the product to determine the concentration of the pollutants on Table 4 in §503.23.

(3) Owners or operators of treatment works shall monitor the sewage sludge that is distributed and marketed prior to disbursion to determine compliance with the Class A pathogen reduction requirements.

(4) Owners or operators of treatment works shall monitor the sewage sludge that is distributed and marketed prior to disbursion to determine compliance with the vector attraction reduction requirements in §503.53(a)-(e).

(b) Record keeping.

Owners or operators of treatment works shall keep, for 5 years, the following information:

(1) The name and address of the distributor of the sewage sludge;

(2) The concentration of the pollutants in the sewage sludge prior to disbursion by the treatment work;

(3) The concentration of the pollutants in the product;

(4) The appropriate annual whole sludge application rate prior to disbursion by the treatment works;

(5) The annual product application rate;

(6) The contract(s) between the distributor of the product and the treatment work, when applicable;

(7) The results of the monitoring of the sewage sludge prior to disbursion by the treatment work to determine compliance with the pathogen reduction requirements;

(8) The results of the monitoring of the sewage sludge prior to disbursion by the treatment work to determine compliance with the vector attraction reduction requirements; and

(9) A copy of the label affixed to the product or the informational sheet accompanying the product.

(c) Reports.

Owners or operators of treatment works shall provide the Permitting Authority with:

(1) The information required by §503.83(b); and

(2) The contract(s) between the treatment work and the distributor of the product, if applicable.

(3) After the initial submission, the owners or operators of a treatment work shall re-submit this information only if there are changes.

§503.84 Disposal of sewage sludge in monofills.

(a) Monitoring.

(1) Owners or operators of treatment works shall monitor the sewage sludge disposed of in monofills to determine the concentration of the pollutants listed on Table 5 in §503.33. Owners or operators shall also monitor for the pollutants listed on Table 13 in §503.72 if the POTW grants removal credits for these pollutants.

(2) Owners or operators of treatment works shall monitor the sewage sludge disposed of in monofills to determine compliance with either Class A or Class B pathogen reduction requirements in §503.52.

(3) Owners or operators of monofills shall continuously monitor the air for methane gas in any structure within a monofill and at the property line of the monofill.

(4) Owners or operators of monofills shall monitor the run-off from the monofill that is collected to determine the volume of the run-off discharged and the concentration of pollutants in the discharge.

(b) Record keeping.

Owners or operators of treatment works or of the monofill, as appropriate, shall keep, for 10 years, the following information:

(1) The concentration of the pollutants listed on Table 5 in §503.33;

(2) The results of the monitoring of the sewage sludge to determine compliance with the pathogen reduction requirements in §503.52;

(3) A record of the methane gas concentration in any structure within the monofill and at the property line of the monofill;

(4) The volume of run-off collected ad discharged and the concentration of the pollutants in the discharge.

(5) Certification that the monofill does not restrict the flow of a base flood; reduce the temporary water storage capacity of a floodplain; or present a hazard to human health, wildlife, or land or water resources;

(6) Certification that the monofill is not a hazard to aircraft from birds if the monofill is located within 3,048 meters (10,000 feet) of aircraft runways used by turbine-powered aircraft or within 1,524 meters (5,000 feet) of an airport runway used only by piston engine-powered aircraft;

(7) Certification that the monofill is designed to withstand stress created by the maximum horizontal ground level acceleration if the monofill is located in a seismic zone;

(8) Certification that each sewage sludge unit is located 60 meters or more from a fault or stress fractures that have had displacement in Holocene time;

(9) Certification that each sewage sludge unit is located in an area that has adequate support for the structural components of the unit; and

(10) Certification that each sewage sludge unit is located outside wetland areas.

(c) Reports.

When sewage sludge is disposed of in a monofill, owners or operators of treatment works or of the monofills, as appropriate, shall provide the Permitting Authority with the information required by §503.84(b), (1) through (4).

§503.85 Disposal of sewage sludge on surface disposal sites

(a) Monitoring.

(1) Owners or operators of treatment works shall monitor the sewage sludge disposed of on surface disposal sites to determine the concentration of the pollutants in the sewage sludge listed on Table 7 in §503.43. Owners or operators shall also monitor for the pollutants listed on Table 13 in §503.72 of the POTW grants a removal credit for these pollutants.

(2) Owners or operators of treatment works shall monitor the sewage sludge disposed of on surface disposal sites to determine compliance with either Class A or Class B pathogen reduction requirements in §503.52.

(3) Owners or operators of treatment works shall monitor the sewage sludge disposed of on surface disposal sites to determine compliance with the vector attraction reduction requirements in §503.53.

(4) When owners or operators of treatment works inject the sewage sludge below the soil surface to reduce the vector attraction, the sewage sludge does not have to be monitored for volatile solids, SOUR, pH, or moisture content.

(5) Owners or operators of surface disposal sites shall continuously monitor the air for methane gas in any structure on the disposal site and at the property line of the site.

(6) Owners or operators of surface disposal sites shall monitor the run-off from the surface disposal site that is collected to determine the volume of the run-off discharged and the concentration of pollutants in the discharge;

(b) Record keeping.

When sewage sludge is disposed of on a surface disposal site the owners or operators of treatment works or of the surface disposal sites, as appropriate, shall keep, for 5 years, the following:

(1) The concentration of the pollutants listed on Table 7 in §503.43;

(2) The results of the monitoring of the sewage sludge to determine compliance with the pathogen reduction requirements §503.32;

(3) The results of the monitoring of the sewage sludge to determine compliance with the vector attraction reduction requirements §503.33;

(4) A record of the methane gas concentration in any structure within the surface disposal site and at the property line of the surface disposal site;

(5) The volume of run-off collected and discharged and the concentration of the pollutants in the discharge;

(6) Certification that the surface disposal site does not restrict the flow of a base flood; reduce the temporary water storage capacity of a floodplain; or present a hazard to human health, wildlife, or land or water resources;

(7) Certification that the surface disposal site is not a hazard to aircraft from birds if the surface disposal site is located within 3,048 meters (10,000 feet) of aircraft runways used by turbine-powered aircraft or within 1,524 meters (5,000 feet) of an airport runway used only by piston engine-powered aircraft;

(8) Certification that the surface disposal site is designed to withstand stress created by the maximum ground level acceleration if the surface disposal site is located in a seismic zone;

(9) Certification that each surface disposal site is located 60 meters or more from a fault or stress fractures that have had displacement in Holocene time;

(10) Certification that each surface disposal site is located in areas that have adequate support for the structural components of the site; and

(11) Certification that each new surface disposal site is located outside wetland areas.

(c) Reports.

Owners or operators of treatment works or of the surface disposal site, as appropriate, shall provide the Permitting Authority with the information required by §503.85(b) (1) through (5).

§503.86 Incineration of sewage sludge.

(a) Monitoring.

(1) Owners or operators of treatment works that incinerate their sewage sludge shall monitor the sewage sludge for concentrations of arsenic, beryllium, cadmium, chromium, lead, mercury, and nickel. The owners and

operators shall also monitor for the pollutants listed on Table 13 in §503.72 if the POTW grants removal credits for these pollutants.

(2) Owners or operators of sewage sludge incinerators shall continuously monitor:

(i) The total hydrocarbon concentration in the incinerator stack;

(ii) The rate at which sewage sludge is fed to an incinerator;

(iii) The combustion temperature in the incinerator;

(iv) The oxygen content of the exit gas; and

(v) The pressure drop across the air pollution control system, if applicable.

(b) Record keeping.

Owners or operators of treatment works or of the sewage sludge incinerator, as appropriate, shall keep, for 5 years, the following:

(1) The concentrations of arsenic, beryllium, cadmium, chromium, lead, mercury, and nickel in the sewage sludge;

(2) A record of the parameters that are monitored continuously, as required by §503.86(a)(2);

(3) Calibration and maintenance records and original instrument chart recordings for continuous-monitoring instruments;

(4) Results of any site-specific air modeling; and

(5) Results of any incinerator performance tests.

(c) Reports.

Owners or operators of treatment works or of the incinerator, as appropriate, shall provide the Permitting Authority with the following information:

(1) The information required by §503.86(b);

(2) The periods when the combustion temperature in the incinerator was above the maximum allowable temperature, specified in §503.64(a)(1) or (b)(1), for 15 minutes or longer;

(3) The periods when the oxygen content of the exit gas from the incinerator stack was above the maximum allowable, as specified in §503.64(a)(2) or (b)(1), for 15 minutes or longer;

(4) The periods when the pressure drop across the air pollution control device exceeded the allowable drop, as specified in §503.64(a)(3) or (b)(2), if applicable, for longer than 1 hour;

(5) The recordings for the total hydrocarbon concentration in the incinerator stack, required by §503.86(a)(2)(i); and

(6) The recordings for the sewage sludge feed rate, required by §503.86(a)(2)(ii).

Appendix B

Comparison of Existing and Proposed Regulations for Control of Pathogens

NEW REGULATIONS	EXISTING REGULATIONS
Class C Pathogen and Vector Attraction Reduction ° Standards for pathogen reduction requirements less stringent than PSRP. ° Regulations for vector attraction and pathogen reduction are separated. ° Pathogen reduction requirements are less than those for Class A or Class B, but with the use of comparable health safety access restriction requirements, standards are maintained. ° Pathogen reduction requirements defined in quantitative terms that can be met using a combination of processing steps.	PSRP: Process to Significantly Reduce Pathogens ° Reduction of vector attractions and pathogen reduction are tied together. ° Only one stabilization process can be employed to achieve PSRP. ° Pathogen reduction requirements are not defined in quantitative terms. ° No controls on grazing of non-food-chain animals or the harvesting of crops.
Class B Pathogen and Vector Attraction Reduction ° Standards for pathogen reduction similar to PSRP. ° Pathogen reduction requirements defined in quantitative terms that can be met using a combination of processing steps. ° Regulations for vector attraction and pathogen reduction are separated.	PFRP: Process to Further Reduce Pathogens ° Reduction of vector attraction and pathogen reduction are tied together. ° Only one stabilization process can be employed to achieve PFRP. ° Pathogen reduction requirements are not defined in quantitative terms. ° Specific process (e.g., composting, heat treatment) are specified to fulfill requirements.
Class A Pathogen and Vector Attraction Reduction ° Standards for pathogen reduction similar to PFRP. ° Pathogen reduction requirements defined in quantitative terms that can be met using a combination of processing steps. ° Regulations for vector attraction and pathogen reduction are separated.	

Source: ERG Analysis; U.S. EPA, 1987. Technical Support Document for Pathogens in Sewage Sludge, Office of Water.